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## Intensive Localized Distribution of the Spore of *B. Botulinus* and Probable Relation of Preserved Vegetables to Type Demonstrated.

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In a report to the Surgeon General,<sup>1</sup> August, 1921, the writer gave a brief summary of an intensive investigation of outbreaks and distribution of the spore of *B. botulinus* in a mountain valley, the Yakima Valley, in the State of Washington. A recent investigation, also carried out in the State of Washington, adds further evidence to the localization of distribution of the spore of *B. botulinus* in a comparatively limited area.

In the southern part of Okanogan County, Wash., situated at an approximate elevation of 2,000 feet and near the Columbia River, there is a ranch of several hundred acres that offers, in the examinations of its soil and preserved food products, the best field evidence to substantiate this interesting epidemiological observation. The following table illustrates this particular point:

TABLE I.—*Botulism, H. Ranch, Okanogan County, Wash.*

Year.	Number of cases.	Number of deaths.	Type of food.	Result of laboratory examinations.
Unknown <sup>1</sup> .....	Unknown.	(2)	Unknown.....	None made.
1921.....	2	1	Home-canned beef.....	Do.
1922.....	3	3	Home-canned string beans.	Positive, type A botulinus toxin.
1922.....	None.	None.	Home-canned corn <sup>2</sup> .....	Do.
1923.....	None.	None.	Home-canned string beans. <sup>4</sup>	Do.

<sup>1</sup> It is stated that several families of Colville Indians working on this ranch died under mysterious circumstances several years ago. The recent outbreaks have focused attention on these cases, and it is now suspected that they were botulism.

<sup>2</sup> Several families of Indians.

<sup>3</sup> Taken from the dining table of a family living on the ranch by the county health officer.

<sup>4</sup> The quality of the beans was tested by feeding them to chickens. The chickens later died with typical symptoms of fowl botulism.

It will be noted that this ranch has had two outbreaks of botulism in human beings, which were undoubtedly botulism and in one of

<sup>1</sup> Annual Report of the Surgeon General of the Public Health Service for the Fiscal Year 1921, p. 17.

which the food involved (home-canned string beans) was proved to contain a toxin (M. L. D. for mice of 1/100,000 of a c. c.) which was neutralized with botulinus antitoxin, type A. The other outbreak was stated to have been due to home-canned beef; but this was not proved by laboratory examination. This is the first outbreak to be recorded in the United States as being caused by this food. An explanation of the high toxicity rate of the foods involved may be found in the distribution of the spores of *B. botulinus* in the soil of this ranch and in the method of preservation. The cold pack method was used, and it is not unlikely that the temperature at which the processing was done was totally inadequate. It was frankly stated that no attention was paid to either the "fill" or the relation of altitude to the processing temperatures (boiling point).

The bacteriological and toxicological examination of the soil yielded interesting and conflicting data. The garden soil was said to have been moderately manured at irregular intervals. Two samples of garden soil, when tested colorimetrically, showed a reaction of pH 7.1, and a third a reaction of pH 7.3. The reaction of the uncultivated soil, or virgin soil, was pH 6.6. The following table shows briefly the results of the examination of the soil for the spores of *B. botulinus*, after enrichment in beef-heart media:

TABLE II.—Results of soil examination for *B. botulinus*, H. Ranch, Okonogan County, Wash.

Description of soil.	Amounts of soil used.			Type of toxin demonstrated.
	100 grams.	10 grams.	1 gram.	
Garden No. 1.....	+	+	+	B
Garden No. 2.....	+	+	+	B
Garden No. 3.....	+	+	+	B
Virgin soil, No. 4.....	+	+	+	B

There are to be noted two things: First, there was a uniformity of results in the various amounts of soil used. This was unexpected, as laboratory data in such experiments usually show variations, which have been explained by assuming that there was an uneven distribution of spores in the specimen; secondly, the same type of toxin was produced—type B.

The demonstration of type A toxin in the foods and type B toxin in the soil demands explanation. These anomalous results were obtained on three different occasions. It seems probable that both organisms are present in the soil, and that the food substances, corn and string beans, are more favorable for the growth of type A organisms and that those of type B are suppressed. This observation may have a bearing on the fact that nearly all human outbreaks of botulism in the United States have been due to type A.

Experimental evidence on the point referred to is shown by the following: 20 grams of commercial canned corn and string beans previously autoclaved in open petri dishes for 30 minutes at 17 pounds' pressure were added to 100 c. c. flasks of beef heart media, together with 1 gram of virgin soil from the ranch, heated to 80° C. for one hour, and overlaid with sterile vaseline. In all, 18 cultures so treated were incubated at 37° C. for 10 days. Two flasks containing soil but no vegetables served as controls. Tests for the presence of toxin and the determination of type were made by intraperitoneal inoculation into mice.

The results are shown in the following table:

TABLE III.—Tests for the presence of toxin.

Description of specimen.	Result of test.	Type of toxin.
Virgin soil, 1 gram (control).....	1 positive.....	B
Do.....	1 negative.....	
Autoclaved corn+virgin soil, 8 specimens.....	4 positives.....	A (4)
	4 negatives.....	
Autoclaved string beans+virgin soil, 8 specimens.....	3 positives.....	A (2); B (1)
	5 negatives.....	
Controls on autoclaved corn in duplicate.....	Negative.....	
Controls on autoclaved beans in duplicate.....	Negative.....	

It will be seen that of two specimens of virgin soil alone in 1 gram amounts, one produced a toxin, type B, *B. botulinus*. This same soil in 1 gram amounts (eight specimens) with the addition of autoclaved corn yielded 4 positives, type A. With the addition of beans, out of 8 specimens tested, 3 were positive. Two of these proved to contain type A and one type B toxin, *B. botulinus*.

Obviously the soil contains both types. The results obtained when the soil alone is planted in ordinary beef-heart medium indicate that type B is predominant. When the soil, together with the corn or beans, is planted in the same medium, type A appears to predominate, indicating that the corn and beans have an enriching effect or favor the growth of type A. There is the other possibility that type B, being the less resistant type to heat, may be destroyed, although this is unlikely to have occurred in the above experiment, as all temperatures were the same, namely, 80° C., one hour.

The following experiment seems to prove that both types, A and B, were present in the soil. Some of the original cultures obtained by planting the soil in the beef-heart medium, which gave a positive test for the presence of type B toxin by the mouse test, were boiled for 30 minutes. Agar shake cultures were made from these and incubated. From these shake cultures, 37 colonies morphologically resembling those of *B. botulinus* were fished with pasteur pipettes under the dissecting microscope and placed in beef-heart enrichment media. Ten of these, after 10 days incubation at 37° C., when

tested, were positive for type A toxin. No type B colonies were isolated. There is, of course, the possibility that the liver agar may have supplied something that favors the growth of type A; or that in the process of boiling, type B organisms were destroyed; or that the writer unintentionally "fished" type A colonies only and missed those of type B.

To test further the effect of heat, the original soil samples in beef-heart media, 12 in number, were detoxified by heating to 80° C. for one hour. Twenty grams of autoclaved corn were added to each of two flasks, and 20 grams of autoclaved beans to each of two other flasks. These flasks were then boiled for 30 minutes and incubated at 37° C. for 10 days. Four flasks similarly treated were not boiled. Two flasks without corn or beans were used as controls for each treatment, with and without boiling. The results are briefly shown in Table IV.

TABLE IV.—*Experiments to determine the effect of boiling on the types of organisms.*

BOILED SPECIMENS.

No.	Sample.	Type of toxin demonstrated
1	Detoxified soil specimen+autoclaved corn.....	A
2	do.....	B
3	Detoxified soil specimen+autoclaved beans.....	A
4	do.....	B
5	Detoxified soil specimen (control).....	B
6	do.....	

UNBOILED SPECIMENS.

7	Detoxified soil specimen+autoclaved corn.....	A
8	do.....	B
9	Detoxified soil specimen+autoclaved beans.....	
10	do.....	
11	Detoxified soil specimen (control).....	
12	do.....	

The above experiment does not offer any great amount of additional evidence as to the effect of temperature on types, but indicates rather definitely that with the addition of corn and beans type A toxin was produced in three out of eight instances in soil in which previously type B had been demonstrated.

It has been stated that type A colonies were fished from liver agar shake cultures made from the growth, in beef-heart medium, obtained from the soil which apparently contained only type B organisms. It was thought that by the addition of soil to beef-broth cultures of these type A colonies it might be possible to demonstrate type B toxin. One gram of the original soil was therefore added to four of these cultures. Two cultures without the addition of soil served as controls. All the cultures were subjected to a temperature of 80° C.



for one hour and were then incubated 10 days. Tests for toxin production showed type A in all the cultures.

TABLE V.

Test.	Result.
4 cultures from liver agar "shake" colonies which yielded type A originally, plus 1 gram original soil, heated to 80° C., 1 hour.	All proved positive type A toxin.
Control.—2 cultures from liver agar "shake" colonies which yielded type A originally, heated to 80° C., 1 hour.	Both cultures proved positive type A toxin.

These results indicate the stability of the type A, once the toxin is formed in the food, even when there is the addition of soil in which type B toxin can generally be demonstrated. However, it would seem more probable that there were many more type A spores in the culture than there were type B spores in the soil and that type A developed and type B was suppressed.

## COMMENT.

The above experiments are offered as evidence that probably many soils contain spores of both type A and type B, *B. botulinus*, which, when inoculated into suitable media, are capable of producing their selective type of poison. (The conditions that induce the formation of specific types in preserved foods are far from being clearly understood.) It is, however, not unlikely that foods like corn and string beans, when contaminated with soil containing the spores of both type A and type B, *B. botulinus*, are responsible in some manner for the production of one or the other type of toxin, and these experiments suggest a more frequent occurrence of type A toxin. We have observed on this ranch curious and interesting anomalous data. Furthermore, the data render doubtful any dogmatic assertion as to any particular type of toxemia being limited to foods grown in any particular geographical region. The experimental and field data here presented do not furnish any conclusive evidence that one type is a mutant of the other, but rather surprisingly indicate that type B is the predominating type in both garden and virgin soil of this restricted area of a western State. Likewise, it is conclusive that this ranch has had a remarkable concentration of outbreaks and that home canning of vegetables grown on its soil under the present conditions is unsafe.

*Acknowledgments.*—It is desired to acknowledge with thanks the cooperation of Dr. Paul West, county health officer of Okanogan County, Wash.

## PHYSIOLOGICAL EFFECTS OF HIGH TEMPERATURES AND HUMIDITIES WITH AND WITHOUT AIR MOVEMENT.

### Effects on Body Temperature and Pulse Rate of Subjects at Rest.

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#### INTRODUCTION.

For several years the writers have been studying various problems of the effect of air conditions in metal mines upon underground workers. In 1918 a short study was made in certain hot and deep mines, and brief reports were published in the *Engineering and Mining Journal* (August, 1920) and in the *Public Health Reports* (vol. 36, No. 4, January 28, 1921).<sup>1</sup>

In 1921 a more extended study was made (also in hot and deep metal mines) for the purpose of ascertaining the limiting conditions imposed upon underground workers by the physiological effect of various air movements, temperatures, and humidities. The determinations were made both with the subjects at work and at rest. It is intended to report this later investigation in a series of short papers, each paper to consider one particular phase of the work. The present paper deals with the effect on body temperature and pulse rate of subjects in still air as compared with moving air, at temperatures from 90° to 100° F., and of 100 per cent relative humidity, the subjects at rest.

#### SUBJECTS USED IN THE INVESTIGATION.

In order to avoid the criticism that data taken upon investigators working in mines only intermittently would not be representative of results taken on everyday mine workers, there were used in the 1921 study, in addition to one of the previous investigators, two miners, one having just left employment as general mine laborer in some of the worst places in one of the hottest mines in the district, and the other having been employed in various capacities in the mines in which the experimental work was being conducted. These three subjects, who were the reagents supplying most of the data, were vigorous and in good health, and thoroughly accustomed to mining work in hot, humid air. All of them remained in good physical condition throughout the period of making the tests. In addition, during the underground field work, data were taken on various other underground employees of the mines entered.

<sup>1</sup> A preliminary study of the physiological effects of high temperatures and high humidities in metal mines, *Public Health Reports*, vol. 36, No. 4, Jan. 28, 1921, pp. 116-129. Reprint No. 639.

## DATA RECORDED.

Blood pressure (taken with a Tycos sphygmomanometer), pulse rate, and rectal body temperature, together with any symptoms of dizziness, headache, weakness, perspiration, etc., were recorded. The air temperature and humidity were taken by a sling psychrometer, and the air velocities by an anemometer. The exact time of taking the readings was also noted. One of the investigators acted as recorder of all the data taken.

The outside, or surface, air temperature and humidity were usually observed before going underground, and the air temperature, body temperature, pulse rate, and blood pressure were taken in the wash-house or "dry" just before going underground. After going underground and before entering the place chosen for the test, a full set of readings was made in a near-by place where it was quiet enough to use the blood pressure apparatus. Such data were also taken in the test place, when feasible.

Incident to taking the physiological data on the subjects, Doctor Sayers necessarily participated in the stay in the hot places and, therefore, was able not only to observe the effect of conditions on the subjects, but also to experience the symptoms himself. Engineering data, such as psychrometric, barometric, and anemometric readings, were made by Mr. Harrington, who also acted as one of the subjects throughout the investigation.

The subjects sat still in the hot or test places, and during the test period exerted no physical effort other than the small amount involved in taking readings of blood pressure, pulse rate, body temperature, psychrometric data, etc. Often it was found necessary to omit taking blood pressure and pulse in the actual test place, in which cases this was done just before entering and just after leaving the test place. In a few instances the data obtained during the test were greatly influenced by a very slight amount of work done by a subject just before beginning the test.

In practically all of the above experimental work samples of the air were taken, the analyses of which showed nearly normal air as far as carbon dioxide and oxygen were concerned, and no carbon monoxide or other poisonous gases were found. The air in the place where the tests at 95° F. or over were made was as nearly absolutely saturated as can be obtained underground, and psychrometric readings were taken frequently enough to make certain that any changes occurring during the test would be discovered.

Figure 1 shows the effect on the body temperature of one subject (No. 5) of still air at 95°, 96°, and 100° F., and of moving air at 91½°, 95°, 98½°, and 100° F. The effect of these various air temperatures is shown on the graph by using zero to represent the subject's tem-

perature at the time of starting the test and then indicating the elevation during the stay in the test place by degrees above zero. The time is calculated in minutes, beginning with zero as the time of entering the test place. The solid lines on the graph represent the air temperatures without any air movement; the dotted lines indicate those with air movement.

A similar graph made for the other subjects would show practically the same general results, so that the one representing the effects on the temperature of subject No. 5 may be considered fairly typical.

#### EFFECT WITHOUT AIR MOVEMENT.

Still saturated air at  $91\frac{1}{2}^{\circ}$  F. caused the following symptoms in a subject: (1) A definite rise in body temperature; (2) moderate increase in pulse rate (18); (3) profuse sweating and feeling of weakness. The after effects were dizziness and weakness.

Although subject No. 5 was the least readily affected of the three (2, 4, and 5), Figure 1 shows that there was a decided increase in his

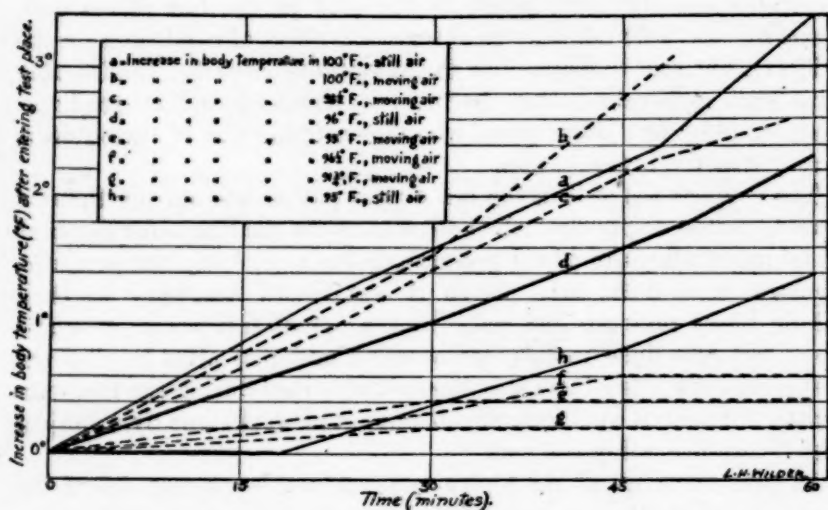


FIG. 1.—Effect of high temperatures and humidities on a subject in still and moving air.

body temperature in the still, saturated air—at the close of the experiment, the rise above the entrance temperature being as follows: At  $95^{\circ}$  there was an increase of  $1.4^{\circ}$ ; at  $96^{\circ}$  an increase of  $2.3^{\circ}$ , and at  $100^{\circ}$  an increase of  $3.4^{\circ}$ . The effect of the still, saturated air on the pulse rate was similar to that on the temperature. The rate of increase at  $95^{\circ}$  and  $96^{\circ}$  was practically the same, although the rate at the end of the test in still, saturated air was slightly higher at  $95^{\circ}$  temperature than at  $96^{\circ}$ , probably due to slightly more exertion by the subject during the  $95^{\circ}$  test than during the  $96^{\circ}$  test. The  $100^{\circ}$

still, saturated air increased the pulse rate very rapidly, the rate being 20 beats above that at 95° and 96° at the end of the test, or a total increase of 74 beats above normal.

While sitting approximately an hour in still, saturated air, with temperature at 95° (Table I A), all the subjects were decidedly distressed, the body temperature going to 101.4° with subject No. 5, to 101.5° with subject No. 2, to 102.5° with subject No. 1, and to 102.5° with subject No. 4, the two latter being somewhat adversely affected by having exerted a little more effort than Nos. 2 and 5 (No. 1 in taking the readings and No. 4 in walking and climbing previous to undergoing the test).



TABLE I A.—Effects of resting one hour in still air at 95° wet bulb, 95° dry bulb (100 per cent relative humidity).

Location.	Time of starting experiment.	Air conditions.				Gas analysis.	Subject No. 1.	Subject No. 2.			Subject No. 4.			Subject No. 5.			Remarks.			
		Wet bulb.	Dry bulb.	Barometer.	Relative humidity (per cent).			Velocity.	Systolic.	Diastolic.	Body temperature.	Pulse.	Systolic.	Diastolic.	Body temperature.	Pulse.				
In office "dry".....	a. m. 8.05	49	60	24.38	47	Feet.	99.0	125	80	98.4	88	118	74	98.6	108	110	78	99.3	96	All felt well; all had slept well, and apparently suffered no ill effects from previous day in 100° dead, saturated air.
At rest at safety station on 2,700 level.	10.00	87	89	24.38	92	20	100.8	103	78	100.0	104	108	78	100.8	144	96	62	99.8	110	Spent from 9 to 10 a. m. trying to find a place to work and had to return to safety station. Subjects Nos. 1 and 4 had exercised considerably and were perspiring profusely; Nos. 2 and 5 were perspiring a little. (At 10.15 all went into dead air at 95° and sat still. All were perspiring freely, but felt fairly well. There seemed to be some H <sub>2</sub> S in the air, and the quality not very good. Place was damp, with many drippers, but not falling at actual place where readings were taken; water running on the floor was 98° F. At 10.32 all were sweating profusely but not feeling badly. No. 4 noted difficulty in breathing about 10.40 and was puffing a little; at 10.50 he was puffing and said he couldn't last much longer. All were perspiring very freely at 10.50 and said place was stuffy. No. 2 was dizzy while standing up to take air samples. At 11 Nos. 1, 2, and 4 said that the next 15 minutes were going to "seem like a year." All were perspiring very freely, especially Nos. 1 and 4; Nos. 2 and 4 had slight chilly sensations. All puffed on making very slight exertion and were breathing deeply. Left the hot location at 11.14. No. 2 complained of being chilly at resting place; No. 5 felt better but not good; Nos. 1 and 4 were dizzy.
Same location in dead air.	10.32	95	95	24.38	100	(CO <sub>2</sub> 0.13) (O <sub>2</sub> 20.72) (N 79.15)	101.2	101.2	100.0	100.0	.....	101.2	.....	101.2	.....	99.8	.....	99.8	.....	
Same location.....	11.05	.....	.....	.....	.....	.....	101.2	.....	100.6	100.6	.....	102.0	.....	102.0	.....	100.6	.....	100.6	.....	
Do.....	11.09	.....	.....	.....	.....	.....	101.4	.....	101.0	138	.....	102.2	170	156	.....	101.0	.....	101.0	136	
Went 100 feet to air..	11.19	87	89	24.38	92	20	102.5	103	66	101.5	144	102	66	102.5	168	98	68	101.4	142	

While the subjects sat still for about an hour in this hot, humid, stagnant air the pulse rate increased from 104 to 158, or 54 beats for subject No. 2; from 144 to 170, or 26 beats for subject No. 4; and from 110 to 156, or 46 beats for subject No. 5.

All subjects perspired very profusely, their clothing being thoroughly saturated and their shoes being partly filled with sweat; they were weak and dizzy, and all "panted" or "puffed" upon making the slightest effort. Subject No. 4 had acute soreness of the chest or lungs which did not disappear until about 10 hours after leaving the hot location.

The resultant effects of sitting for an hour in the hot, humid air at 96° F. (Table II A) without air movement and doing no work other than occasional taking of body temperature or of temperature of the surrounding air, essentially checked those in still, saturated air at 95°; and all who underwent the hour test felt that it was a difficult experience.

TABLE II A.—Effects of resting one hour in still air at 96° wet bulb, 96° dry bulb (100 per cent relative humidity).

Location.	Time of starting experiment.	Air conditions.				Sub-ject No. 1.	Subject No. 2.			Subject No. 4.			Subject No. 5.			Remarks.					
		Wet bulb.	Dry bulb.	Barometer.	Relative humidity (per cent).		Velocity.	Gas analysis.	Body temperature.	Systolic.	Diastolic.	Body temperature.	Systolic.	Diastolic.	Body temperature.		Pulse.				
In office "dry".....	4. m. 8. 00	53	72½	24.05	63	<i>Fed.</i>	.....	99.0	122	82	98.9	88	126	82	104	116	72	99.2	96	All were feeling fine. At 8.55 Nos. 2 and 5 only just moist. Nos. 1 and 4 were sweating fairly freely.	
Went into dead air..	9. 00	96	96	.....	100	0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	(All stood it well except for the profuse perspiration. Place was damp with drippers falling fairly freely and water running on floor. Nos. 1, 2, and 5 feeling well, but puffing a little. Heads were clear. No. 1 apparently not feeling quite as well as others; sweating heavily. No. 4 did not move from a reclining position and, while sweating freely, did not puff or get dizzy.	
At 2,700 station, in dead air.	9. 30	96	96	26.42	100	0	CO <sub>2</sub> 0.08 O <sub>2</sub> 20.60 N 79.23	99.7	.....	.....	100.0	.....	.....	99.5	.....	.....	.....	100.0	.....	No. 1's head felt a little full and he was puffing some. No. 2 felt effort and puffed, but could stay much longer. No. 5 felt fine, but puffed some on standing up. No. 4 felt about normal until he arose to take pulse, then he felt somewhat dizzy and puffed a little. All were sweating very freely.	
Same location.....	9. 50	.....	.....	.....	.....	.....	.....	100.0	.....	.....	100.7	.....	.....	100.6	.....	.....	.....	100.8	.....	No. 1 was puffing perceptibly, felt a little dizzy, especially on standing, and was sweating very profusely. No. 2 had a little headache, especially on standing. No. 4 was slightly dizzy on standing, but felt he had a comparatively easy time. No. 5 felt fairly well, but puffed on standing. All were perspiring very freely. No. 4 had much sweat in boots.	
Do.....	9. 57	.....	.....	.....	.....	.....	.....	100.4	.....	.....	101.2	128	.....	101.7	134	.....	.....	101.3	132		
In moving air.....	10.05	87	89	26.42	92	20-30	.....	101.0	108	78	101.4	132	104	72	101.8	174	98	64	101.6	154	

Sitting an hour in still, saturated air at 100° F. (Table III A) caused symptoms similar to those found at lower temperatures, but they appeared earlier. Each subject quickly had definite increase of body temperature and pulse rate, subjects Nos. 2 and 5 having a maximum body temperature of 102.3°, subject No. 1 of 103.3°, and subject No. 4 of 103.8°. Subject No. 2 had a maximum pulse rate of 152, subject No. 5 of 168, and subject No. 4 of more than 175.

All perspired very profusely (even the shoes being partly filled with perspiration) and were definitely weak and dizzy upon leaving the place of the test. The symptoms persisted for about an hour afterwards. This was a very trying test for all.

TABLE III A.—*Effects of resting one hour in still air at 100° wet bulb, 100° dry bulb (100 per cent relative humidity).*

Location.	Time of starting experiment.	Air conditions.					Gas analysis.	Subject No. 1.			Subject No. 2.			Subject No. 4.			Subject No. 5.			Remarks.	
		Wet bulb.	Dry bulb.	Barometer.	Relative humidity (per cent).	Velocity.		Body temperature.	Diastolic.	Systolic.	Body temperature.	Diastolic.	Systolic.	Body temperature.	Diastolic.	Systolic.	Body temperature.	Diastolic.	Pulse.		
At 2,700 level in drift.	a. m. 8.50	87	90	26.58	89	Feet. 20	.....	99.8	128	84	99.6	90	118	78	99.5	130	106	74	98.8	104	Nos. 2 and 5 sweating just a little; Nos. 1 and 4 sweating profusely. Had taken no exercise except walking about 50 feet on the level. An Italian who had pushed a car a few hundred feet in this air for two months said he was about ready to quit; he was sweating profusely and looked thin; his skin felt hot. Another Italian was not even sweating; apparently unaffected. All were sweating very profusely, but seemed to be feeling well as yet. Entered this place at 9.15. Skin of fingers shriveled at 9.40. No. 1 had chilly sensations on back at 9.40.
In 2,706 level, drippers falling from roof.	9.30	100	100	26.58	100	10	.....	100.3	.....	.....	100.2	.....	.....	.....	100.6	.....	.....	.....	100.0	.....	At this time all felt fit; were somewhat dizzy, but did not feel, in general, as badly as when leaving the hot location.
In same location.....	10.00	.....	.....	.....	.....	10	.....	101.4	.....	.....	101.1	149	.....	.....	101.7	175	.....	.....	101.2	166	
Do.	10.18	.....	.....	.....	.....	10	.....	102.6	.....	.....	102.7	.....	.....	.....	103.5	.....	.....	.....	102.2	.....	
In air.....	10.20	87	88½	26.58	94	10	.....	103.3	110	68	102.3	152	104	62	103.8	168	102	68	102.3	168	

1 Absolutely still.



## EFFECT WITH AIR MOVEMENT.

In the moving air at  $91\frac{1}{4}^{\circ}$  and 98 per cent relative humidity (no tests being made on subject No. 5 at this temperature in still air). Figure 1 shows that the body temperature of subject No. 5 increased very little by sitting still for an hour, but that it was definitely increased in moving, saturated air  $95^{\circ}$ , more seriously affected by moving, saturated air  $96\frac{1}{4}^{\circ}$ , and still more so by saturated air at  $98\frac{1}{4}^{\circ}$  temperature. Subject No. 5 (as well as the other subjects) was unable to endure for the full hour the moving, saturated air at  $100^{\circ}$ , and the graph shows that this air, though endured less than the usual hour, ran his body temperature 3.1 degrees above that at the beginning of the test, or to above  $102^{\circ}$  F.

As was the case in the still air, the effect of the moving air on the pulse of subject No. 5 was similar to the effect of the moving air on his temperature, except that in the  $95^{\circ}$  moving air his pulse did not rise as did his temperature, but fell slightly instead. This was probably due to the fact that his pulse was high at the beginning of this experiment on account of exertion in helping set the fan; otherwise it is probable that his pulse rate would have remained practically the same throughout this test. There was an increase, from the initial rate, of 12 beats in the  $91\frac{1}{4}^{\circ}$  moving air, of 20 beats in the  $96\frac{1}{4}^{\circ}$  moving air, of 38 beats in the  $100^{\circ}$  moving air (in 49 minutes, as he could not remain the full hour), and 40 beats in the  $98\frac{1}{4}^{\circ}$  moving air.

TABLE I.—Effects of resting one hour in moving air at 91½° wet bulb, 91½° dry bulb (98 per cent relative humidity).

Location.	Air conditions.				Sub- ject No. 1.	Subject No. 2.			Subject No. 4.			Subject No. 5.			Remarks.
	Wet bulb.	Dry bulb.	Barometer.	Relative humidity (per cent).	Velocity.	Gas analysis.	Systolic.	Diastolic.	Body temperature.	Pulse.	Systolic.	Diastolic.	Body temperature.	Pulse.	
At 2,700 station.....	89	91	28.44	92	<i>Fed.</i> 0	.....	100.2	108	78	99.7	96.1	74	98.8	112	All were sweating very freely, although they had done nothing but walk 1,200 feet along a level drift in air moving about 30 to 50 feet per minute. (All resting in moving air and felt very much cooler. The mucker, who was working in this place, said that without the fan he could stand it for about 15 minutes, then had to go down to air for about the same length of time; but he said that with fan he could stand it all day.)
In first-floor stope on 2,700 level.	91	91½	28.44	100	200 1,000	OC₂ 0.07 O₂ 20.80 N 79.13	100.2	100.4	100.4	100.0	100.2	100.0	99.0	112	By 10.15 the hands and arms of all subjects were free of sweat and they were sweating only a little at forehead and face. The workmen went up into the stope at noon so fast where the fan was operating. The mucker said the fan was working all right and much better with the fan as with it he could stand it. Just before readings, No. 2 had walked 3,500 feet on level in air about 60° saturated. Nos. 1, 4, and 5 had walked 1,300 feet just before readings.
In same location.....	.....	.....	.....	.....	.....	.....	100.2	100.4	100.4	100.0	100.0	100.0	99.0	112	
Do.....	.....	.....	.....	.....	.....	.....	100.2	100.4	100.4	100.0	100.0	100.0	99.0	112	
At 2,700 station crescent.	87	89	28.44	92	.....	.....	122	76	102.0	142	98	66	99.1	124	

All subjects felt well throughout the more than one hour spent in the moving, practically saturated air at  $91\frac{3}{4}^{\circ}$  F. (Table I); there was no headache or dizziness and comparatively little perspiration. However, when the fan that produced the air movement was stopped, the place became oppressive immediately and perspiration quickly became profuse. The place in which this test was made was a stope just above a level 2,700 feet from the surface. The air was not quite saturated ( $91\frac{1}{2}^{\circ}$  wet bulb and  $91\frac{3}{4}^{\circ}$  dry bulb), but it was absolutely stagnant and so oppressive that the workers were accustomed to go to the level below to cool after having worked in the stope for about 15 or 20 minutes, returning to work after a rest of 15 to 30 minutes. A small compressed-air-driven fan, consuming about 20 cubic feet of air per minute, was introduced by the investigators to give local movement to about 5,000 cubic feet of air per minute from the place, merely recirculating the air essentially as is done by the ordinary office fan, the velocity being over 3,000 linear feet per minute at the fan, diminishing to a few hundred feet per minute at a point 25 or 30 feet distant from the fan. While the noise made by the fan was somewhat annoying, the decided improvement made by moving the air was apparent immediately. So definite was this improvement after the placing of the fan that not only did the stope workers discontinue the practice of going down to the level to cool, remaining at work in the stope practically continuously, but other workers in the more or less immediate locality, who were accustomed to congregate in the level below to eat or to cool, soon began to come into the stope, as the conditions in the stope when the fan was in operation were more comfortable than those on the level.

TABLE I B.—Effects of resting one hour in moving air at 95° wet bulb, 95° dry bulb (100 per cent relative humidity).

Location.	Time of starting experiment.	Air conditions.				Gas analysis.	Subject No. 1.			Subject No. 2.			Subject No. 4.			Subject No. 5.			Remarks.	
		Wet bulb.	Dry bulb.	Barometer.	Relative humidity (per cent).		Velocity.	Body temperature.	Systolic.	Diastolic.	Pulse.	Body temperature.	Systolic.	Diastolic.	Pulse.	Body temperature.	Systolic.	Diastolic.		Pulse.
On 2,700 level in safety dead end. In same location.....	a. m.					Feet. (CO <sub>2</sub> 0.11 O <sub>2</sub> 20.72 N 79.17)														
	10.10	95	95	26.47	100	{ 300-700	100.0													
	10.30						100.0													
Do.....	10.47						100.0													
Do.....	11.00						100.2													
In air.....	11.10	87	89		92	20-30	100.8	110	78	100.2	108	108	72	100.3	132	102	76	100.2	114	

Data taken in the same place as for the 95° still air (Table I B), but with the use of the small fan to give motion to the air, 95° saturated; subject No. 2 sitting in air with velocity about 500 linear feet per minute as measured by an anemometer, subject No. 4 in a velocity of 250 to 300 feet, and subject No. 5 in a velocity of about 600 feet, show that the body temperature and pulse rate of the three subjects were scarcely affected, and, although all perspired some, there was no excessive perspiration and parts of the clothing remained dry. There was little or no dizziness experienced during the test or afterwards; no "panting" or "puffing," and no weakness. In fact, all subjects felt comparatively comfortable in this moving, saturated air at 95° F. (subject No. 2 felt that he could work fairly efficiently in it). On the other hand, all felt decidedly ill and uncomfortable in the same air *when it was still*, and all knew definitely that very little work could be done in the stagnant air. Figure 1 shows the decided difference in favor of moving 95° saturated air, as compared with the same air when still, as indicated by the effect on the body temperature of subject No. 5.



TABLE II B.—Effects of resting one hour in moving air at 96° wet bulb, 96° dry bulb (100 per cent relative humidity.)

Location.	Time of starting experiment.				Air conditions.				Sub- ject No. 1.	Subject No. 2.			Subject No. 4.			Subject No. 5.			Remarks.
	Wet bulb.	Dry bulb.	Barometer.	Relative humidity (per cent).	Velocity.	Gas analysis.	Body temperature.	Systolic.	Diastolic.	Body temperature.	Systolic.	Diastolic.	Body temperature.	Systolic.	Diastolic.	Body temperature.	Pulse.	Pulse.	
At 2,703, but in air ..	86	88	27.02	92	30	.....	99.6	112	78	99.7	88	108	72	99.0	114	70	100.0	124	Subjects Nos. 1 and 5 got up a "sweat" while setting the fan, but had cooled off in moving air before these readings were taken.
Same, in hot location.	96	96	27.02	100	50-650	CO <sub>2</sub> 0.05 O <sub>2</sub> 20.88 N 79.05	99.6	.....	.....	100.4	.....	.....	99.7	.....	.....	100.3	.....	.....	(All feeling fine, but still sweating profusely.
Same location.....	.....	.....	.....	.....	.....	.....	100.0	.....	.....	100.5	.....	.....	100.1	.....	.....	100.0	.....	.....	Went into test place at 9.30.
Do.....	.....	.....	.....	.....	.....	.....	100.0	.....	.....	100.5	.....	.....	100.6	.....	.....	100.6	.....	.....	All felt well; no headache or dizziness.
Do.....	.....	.....	.....	.....	.....	.....	100.0	.....	.....	100.5	.....	.....	100.6	.....	.....	100.6	.....	.....	No puffing, except No. 5 puffed a little when standing for pulse reading. No dizziness; very profuse sweating. Left hot location at 10.31. No. 5 had sweat in shoes; felt worse than in test at 95-95°.
In air.....	86	87	27.02	96	30	.....	100.3	104	72	101.0	124	108	74	100.7	128	64	101.1	144	No. 2 sat on a log and the perspiration ran down the log from his clothing. No puffing, dizziness, or headache.

The results on the subjects with moving 96° saturated air (Table II B), using the small fan, are described below. Subject No. 2 sat in this hot, humid air that was moving at a velocity of about 300 feet per minute; and, while perspiration was profuse, saturating clothing and even shoes, no "panting" or dizziness occurred and no headache was felt as when in still air of the same temperature, and little or no weakness was felt when the test was over. Subject No. 4 sat for an hour in 96° saturated air having a velocity of about 300 feet per minute and, although perspiring freely, did not have shoes partly filled with perspiration as occurred in the same air when there was no movement. In this test subject No. 4 also escaped the headache, dizziness, and "panting" which he experienced at the same temperature in still air. The table shows definitely less change in body temperature and pulse rate of subject No. 4 with the moving air than with the still 96° saturated air, though the other conditions as to air quality, effort exerted, etc., were essentially the same in both tests. On subject No. 5, the effect of sitting an hour in 96°-saturated air moving at the rate of 100 to 200 linear feet per minute is not in agreement with the effect on subjects Nos. 2 and 4 in air of the same temperature and humidity, but moving about 300 linear feet per minute. Subject No. 5 had exerted physical force to a certain extent for about 15 minutes trying to set the 50-pound fan for the test, and had somewhat increased his body temperature when, with the others, he entered the moving 96°-saturated air and sat down for the hour test. While subjects Nos. 2 and 4 had no headache, dizziness, or "puffing" in the moving air, subject No. 5, on this date, "puffed" a little on standing up, and, in addition to having his clothing saturated with perspiration (as did subjects Nos. 2 and 4), also had his shoes partly filled with perspiration (although subjects Nos. 2 and 4 were not thus affected). Subject No. 5 reported that this experience was much more difficult to endure than any of the other tests; but subjects Nos. 2 and 4 felt that it was not nearly as severe as those in still, saturated air. It is probable that the comparatively small amount of work done in setting the fan was responsible for the difficulty experienced by subject No. 5 in enduring the test condition on this occasion.



No data were obtained in still, saturated air at  $98\frac{1}{2}^{\circ}$  F., but in moving air under these conditions the following effects were noted (Table II): The body temperature of subject No. 1 rose to  $102.3^{\circ}$  after spending an hour in the test place. The body temperature of subject No. 2 rose from normal on the surface to  $100^{\circ}$  F. before going into the test place, due to a certain amount of leisurely walking on levels in still, nearly saturated air around  $90^{\circ}$  F. Body temperature rose from  $100^{\circ}$  to  $101.3^{\circ}$  F. after sitting still an hour in the  $98\frac{1}{2}^{\circ}$  swiftly moving, saturated air, and continued to rise even after the subject left the hot location. His pulse rate rose from 88 at the surface before going underground to 104 after walking around underground, as described above; and after sitting the hour in the moving  $98\frac{1}{2}^{\circ}$  saturated air it was 158. This swiftly moving (500 to 800 feet per minute) saturated air at  $98\frac{1}{2}^{\circ}$  made subject No. 2 feel decidedly dizzy upon even slight exertion or emotion, his skin felt hot, perspiration was very profuse (saturating clothing and nearly filling shoes), and though very strong physically he felt very weak after the test, and said it was far more oppressive than the experiences in moving, saturated air at  $92^{\circ}$ ,  $95^{\circ}$ , or  $96^{\circ}$ , but was not as bad as still, saturated air at  $95^{\circ}$ .

The data for this test on subject No. 4 in the same velocity of air show that the body temperature went to  $103^{\circ}$  and the pulse rate to 183, these high readings being due probably to the fact that subject No. 4 had done some work setting the fan before entering on the test. Subject No. 4 also had hot skin, some dizziness, weakness, and trembling, and had clothing saturated with perspiration, his shoes being nearly full of sweat. He felt that the test was much more severe than in moving, saturated air at  $95^{\circ}$  or  $96^{\circ}$ , but not as bad as still air at  $95^{\circ}$  when saturated.

Data on subject No. 5 sitting still an hour in the  $98\frac{1}{2}^{\circ}$  saturated air, with velocity about 300 linear feet per minute, show that he had essentially the same unfavorable symptoms as subjects Nos. 2 and 4, his body temperature going to  $101.9^{\circ}$  and his pulse rate to 146. He also felt dizzy, weak, and had a "heaviness in the head." He pronounced it a trying experience, stating that he believed it would be impossible for him to work under such conditions.





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minutes or more longer, but was puffing, dizzy, and weak, with skin hot when he reached outside.

In the saturated air at 100° (Table III B), subject No. 2 sat at a point where the air had a velocity of 200 to 300 linear feet per minute, subject No. 4 in velocity of 700 to 800 feet, and subject No. 5 in velocity of 650 to 700 feet per minute. No one was able to remain the full hour in this moving, saturated air at 100°, subject No. 2 being compelled to leave after sitting still for 45 minutes, subject No. 4 leaving after 40 minutes, and subject No. 5 leaving after 49 minutes. All subjects began to feel ill in less than 30 minutes in this swiftly-moving, saturated air at 100°; all perspired excessively and felt dizzy and weak. All were convinced that to try to remain the full hour might result in collapse, and were united in the conviction that while it was advantageous to give motion to saturated air below 98° F., movement was a decided disadvantage to saturated air above 98° F. It will be noted that pulse rate and body temperature apparently did not have time to go to higher limits, though all subjects had body temperature over 102° F. and an increase in pulse rate of 40 per cent or over.

#### SUMMARY.

##### A. Remaining at rest in saturated air at 91½° F. for one hour,

With no air movement caused—

1. An increase in body temperature;
2. A moderate increase in pulse rate;
3. Profuse sweating;
4. After effects of dizziness and weakness.

With air movement caused—

1. Slight or no increase in body temperature;
2. Slight increase in pulse rate;
3. Slight perspiration;
4. No after effects;
5. No ill effects at any time; but the noise of the fan was annoying.

##### B. Remaining at rest in saturated air at 95° for one hour,

With no air movement caused—

1. An increase in body temperature;
2. A marked increase in pulse rate;
3. Very profuse sweating, clothing being saturated with perspiration and sweat in shoes of all subjects;
4. Dizziness on movement, and increase in depth and rate of respiration (puffing somewhat on slight movement); chilly sensations in some subjects.

With air movement (250 to 600 linear feet per minute) caused—

1. Slight or no rise in body temperature;
2. Slight or no rise in pulse rate;
3. Profuse sweating, but not sufficient to wet all clothing;
4. No untoward symptoms in subjects other than profuse sweating.

C. Remaining at rest in saturated air at 96°, still and moving, caused the subjects to experience symptoms practically the same as those felt in still or moving saturated air, respectively, at 95° F.

D. Remaining at rest in saturated air at 98½° F. for one hour,

With air movement caused—

1. An increase in body temperature;
2. An increase in pulse rate (in one case to 183);
3. Very profuse sweating, clothing being saturated (sweat could be poured from shoes);
4. Dizziness on movement. All felt that little work could be done at this temperature and that the conditions were much worse than in moving saturated air at 95°, but not as bad as moving saturated air at 100° F.

E. Remaining at rest in saturated air at 100° F.,

With no air movement caused—

1. A marked rise in body temperature, which reached 102.3° F.;
2. A marked rise in pulse rate, varying in different subjects from 152 to more than 175;
3. Profuse sweating, the shoes being partly filled with perspiration;
4. Early appearance of dizziness, weakness, and persistence of symptoms for about one hour after test. The test was very trying.

With air movement (200 to 800 linear feet per minute) caused—

All the above symptoms, and no subject remained a full hour.

The untoward effects upon man of almost saturated air with temperature above 90° F. and below 98° F. are much less when the air is moving than when it is still. Further, the output or work that can be done is greater when the air is moving than when it is still, with the above temperature and humidity.

No beneficial effects were found by moving saturated air at 98.6° or 100° F., even at high velocities; and there was apparently some disadvantage.

## BIRTHS, DEATHS, AND INFANT MORTALITY, 1921 AND 1922.

PROVISIONAL FIGURES FOR 1922 AND RATES FOR 1921 AND 1922 IN THE BIRTH REGISTRATION AREA OF THE UNITED STATES.

The Bureau of the Census, Department of Commerce, has issued a pamphlet entitled "Summary of Provisional Birth and Mortality Figures, 1922," from which the table printed below is taken. Similar data are given in the pamphlet for 547 cities in the United States having more than 10,000 population.

It is stated that birth rates for 1922 were lower than for 1921 in every one of the 25 States for which figures for the two years are shown in the following summary. The highest 1922 birth rate (34.4 per 1,000 population) is shown for the cities of Wyoming and the lowest (16.5) for the rural districts of Connecticut.

Death rates for 1922 were slightly higher than for 1921 in 19 of the 27 States shown for both years. The highest 1922 death rate (21.8 per 1,000 population) is shown for the cities of Mississippi and the lowest (7.4) for the rural sections of Montana.

Infant mortality rates for 1922 on the whole balance those of 1921, only 10 of the 25 States showing higher rates in 1922 than in 1921. The highest 1922 infant mortality rate (105) appears for the cities of South Carolina and the lowest (55) for the rural districts of Nebraska. Infant mortality rates shown for both years for 51 cities of 100,000 population or more in 1920 are in 19 of these cities lower in 1922 than in 1921, the highest rate (107) appearing for Trenton and the lowest (50) for Seattle.

*Births and deaths, 1922 (provisional figures), and birth, death, and infant mortality rates, 1921 and 1922, in the birth registration area of the United States.*

Figures for Massachusetts and Utah are omitted because transcripts for the entire year have not been received. The term "cities" indicates municipalities of 10,000 inhabitants or more in 1920.]

Area.	Population, estimated as of July 1, 1922.	Births (exclusive of stillbirths).			Deaths (exclusive of stillbirths).			Deaths of infants under 1 year of age.		
		Total 1922.	Rate per 1,000 population.		Total, 1922.	Rate per 1,000 population.		Total, 1922.	Rate per 1,000 births.	
			1922	1921		1922	1921		1922	1921
States shown for both years <sup>1</sup> .....	66,935,800	1,519,595	22.7	24.3	798,893	11.9	11.7	115,648	76	76
Cities.....	32,905,781	732,201	22.3	23.9	412,035	12.5	12.2	58,289	80	78
Rural.....	34,030,019	787,394	23.1	24.8	386,858	11.4	11.2	57,359	73	74
REGISTRATION STATES.										
California.....	3,697,070	73,205	19.8	20.2	51,962	14.1	13.2	5,216	71	66
Cities.....	2,124,680	42,132	19.8	20.1	30,113	14.2	13.5	2,699	64	60
Rural.....	1,572,390	31,073	19.8	20.2	21,849	13.9	12.8	2,517	81	75
Connecticut.....	1,449,097	31,138	21.5	24.0	17,430	12.0	11.4	2,413	77	73
Cities.....	1,093,985	25,261	23.1	25.9	13,098	12.0	11.3	1,957	77	72
Rural.....	355,112	5,877	16.5	18.1	4,332	12.2	11.5	456	78	79
Delaware.....	228,330	4,711	20.6	22.4	3,004	13.2	13.1	473	100	98
Cities.....	115,568	2,479	21.5	23.5	1,393	12.1	12.0	247	100	93
Rural.....	112,762	2,232	19.8	21.3	1,611	14.3	14.3	226	101	103
Illinois.....	6,703,312	134,040	20.0	( <sup>2</sup> )	75,799	11.3	11.1	10,189	76	( <sup>2</sup> )
Cities.....	4,002,384	81,860	20.5	( <sup>2</sup> )	46,374	11.6	11.5	6,626	81	( <sup>2</sup> )
Rural.....	2,700,928	52,180	19.3	( <sup>2</sup> )	29,395	10.9	10.5	3,563	68	( <sup>2</sup> )
Indiana.....	2,989,493	64,088	21.4	23.0	35,684	11.9	11.9	4,328	68	71
Cities.....	1,251,073	26,639	21.3	23.2	11,851	11.9	12.0	2,028	76	79
Rural.....	1,738,420	37,439	21.5	22.9	20,823	12.0	11.8	2,300	61	66
Kansas.....	1,789,423	38,729	21.6	23.3	18,845	10.5	10.2	2,491	64	63
Cities.....	445,136	10,030	22.5	23.5	5,845	13.1	12.4	785	78	73
Rural.....	1,344,287	28,699	21.3	23.2	13,000	9.7	9.4	1,709	60	59
Kentucky.....	2,449,263	62,137	25.4	27.6	26,168	10.7	10.5	4,265	69	62
Cities.....	467,709	9,425	20.2	21.9	6,954	14.9	14.4	778	83	72
Rural.....	1,981,554	52,712	26.6	28.9	19,214	9.7	9.7	3,487	66	60
Maine.....	774,617	17,469	22.6	22.9	11,424	14.7	14.0	1,513	87	88
Cities.....	222,655	5,260	23.6	23.5	3,533	15.9	14.8	512	97	79
Rural.....	551,962	12,209	22.1	22.7	7,891	14.3	13.7	1,001	82	92

<sup>1</sup> Includes District of Columbia.

<sup>2</sup> Not in the birth registration area in 1921.

*Births and deaths, 1922 (provisional figures), and birth, death, and infant mortality rates, 1921 and 1922, in the birth registration area of the United States—Continued.*

Area.	Popula- tion, esti- mated as of July 1, 1922.	Births (exclusive of stillbirths).		Deaths (exclusive of stillbirths).		Deaths of infants under 1 year of age.				
		Total, 1922.	Rate per 1,000 popu- lation.	Total, 1922.	Rate per 1,000 popu- lation.	Total, 1922.	Rate per 1,000 births.			
								1922	1921	1922
REGISTRATION STATES— continued.										
Maryland.....	1,489,399	34,455	23.1	25.1	20,256	13.6	13.6	3,245	94	94
Cities.....	846,507	19,318	22.8	24.8	11,977	14.1	13.8	1,788	93	87
Rural.....	642,892	15,137	23.5	25.5	8,279	12.9	13.2	1,457	96	102
Michigan.....	3,889,418	90,174	23.2	25.3	43,664	11.2	11.6	6,707	74	79
Cities.....	2,116,697	48,917	23.1	25.8	22,463	10.6	10.8	3,965	81	81
Rural.....	1,772,721	41,257	23.3	24.8	21,201	12.0	12.6	2,742	66	75
Minnesota.....	2,467,318	57,022	23.1	23.6	23,538	9.5	9.4	3,299	58	50
Cities.....	893,362	20,503	23.7	24.1	10,065	11.7	11.5	1,238	60	59
Rural.....	1,603,956	36,519	22.8	23.4	13,473	8.4	8.2	2,061	56	50
Mississippi.....	1,790,618	43,527	24.3	25.8	19,385	10.8	11.1	2,967	68	68
Cities.....	139,716	3,513	25.1	25.7	3,048	21.8	21.6	307	87	95
Rural.....	1,650,902	40,014	24.2	25.8	16,337	9.9	10.3	2,660	66	66
Montana.....	593,396	10,873	18.3	( <sup>2</sup> )	5,083	8.6	8.2	763	70	( <sup>2</sup> )
Cities.....	121,919	2,677	22.0	( <sup>2</sup> )	1,611	13.2	11.9	212	79	( <sup>2</sup> )
Rural.....	471,477	8,196	17.4	( <sup>2</sup> )	3,472	7.4	7.2	551	67	( <sup>2</sup> )
Nebraska.....	1,323,193	30,080	22.7	24.5	12,397	9.4	9.2	1,764	59	59
Cities.....	297,276	6,737	22.7	24.4	3,872	13.0	13.1	478	71	74
Rural.....	1,025,917	23,343	22.8	24.6	8,525	8.3	8.0	1,286	55	54
New Hampshire.....	446,304	9,748	21.8	22.8	6,533	14.6	13.7	779	80	87
Cities.....	198,789	4,974	25.0	26.7	2,803	14.1	13.5	447	90	95
Rural.....	247,515	4,774	19.3	19.6	3,730	15.1	13.9	332	70	78
New Jersey.....	3,315,231	74,558	22.5	24.1	40,384	12.2	11.7	5,859	79	74
Cities.....	2,165,591	52,209	24.1	26.1	25,803	11.9	11.5	4,137	79	74
Rural.....	1,149,640	22,349	19.4	20.2	14,581	12.7	11.9	1,722	77	74
New York.....	10,712,680	231,383	21.6	22.7	139,035	13.0	12.3	17,824	77	75
Cities.....	8,427,411	186,705	22.2	23.4	104,811	12.4	11.8	14,624	78	76
Rural.....	2,285,269	44,678	19.6	20.0	34,224	15.0	14.3	3,200	72	74
North Carolina.....	2,649,982	79,920	30.2	33.8	30,446	11.5	11.3	6,471	81	75
Cities.....	336,528	9,380	27.9	29.3	5,385	16.0	15.8	913	97	97
Rural.....	2,313,454	70,540	30.5	34.5	25,061	10.8	10.6	5,558	79	72
Ohio.....	6,014,914	122,735	20.4	21.9	68,093	11.3	11.3	8,771	71	75
Cities.....	3,395,737	69,660	20.6	22.3	37,786	11.1	11.2	5,322	76	76
Rural.....	2,619,177	52,875	20.2	21.3	30,307	11.6	11.5	3,449	65	73
Oregon.....	811,875	14,969	18.4	19.3	9,341	11.5	10.4	871	58	51
Cities.....	313,888	6,115	19.5	20.4	4,210	13.4	12.2	359	59	50
Rural.....	497,987	8,854	17.8	18.7	5,131	10.3	9.2	512	58	52
Pennsylvania.....	8,991,666	214,347	23.8	25.8	110,700	12.3	12.4	18,886	88	88
Cities.....	4,616,305	106,815	23.1	25.3	60,227	13.0	13.0	9,491	89	86
Rural.....	4,375,361	107,532	24.6	26.4	50,473	11.5	11.7	9,395	87	89
Rhode Island.....	620,308	14,302	23.1	23.6	8,144	13.1	12.6	1,221	85	93
Cities.....	515,562	12,116	23.5	24.4	6,807	13.2	12.7	1,048	86	94
Rural.....	104,746	2,186	20.9	19.7	1,337	12.8	12.4	173	79	86
South Carolina.....	1,727,070	46,446	26.9	29.5	20,705	12.0	11.9	4,329	93	96
Cities.....	181,137	5,234	28.9	30.7	3,905	21.6	21.9	550	105	127
Rural.....	1,545,933	41,212	26.7	29.4	16,800	10.9	10.8	3,779	92	92
Vermont.....	352,428	7,520	21.3	22.5	5,169	14.7	14.2	550	73	78
Cities.....	48,514	1,183	24.4	25.5	767	15.8	15.4	116	98	102
Rural.....	303,914	6,337	20.9	22.0	4,402	14.5	14.0	434	68	73
Virginia.....	2,372,940	64,783	27.3	29.9	28,690	12.1	12.2	4,966	77	79
Cities.....	581,739	13,493	23.2	25.4	8,026	13.8	14.0	1,268	94	95
Rural.....	1,791,201	51,290	28.6	31.3	20,664	11.5	11.6	3,698	72	74
Washington.....	4,411,890	25,377	18.0	19.6	14,194	10.1	9.5	1,563	62	55
Cities.....	668,711	12,556	18.8	20.5	7,111	10.6	10.1	732	58	55
Rural.....	743,179	12,821	17.3	18.8	7,083	9.5	9.0	831	65	56
Wisconsin.....	2,708,858	57,700	21.3	23.0	27,397	10.1	10.3	4,104	71	72
Cities.....	1,066,509	22,265	22.1	23.9	10,867	10.8	10.9	1,730	78	79
Rural.....	1,702,349	35,435	20.8	22.5	16,530	9.7	9.9	2,374	67	68
Wyoming.....	206,875	5,188	25.1	( <sup>2</sup> )	1,931	9.3	( <sup>2</sup> )	398	77	( <sup>2</sup> )
Cities.....	28,958	995	34.4	( <sup>2</sup> )	412	14.2	( <sup>2</sup> )	101	102	( <sup>2</sup> )
Rural.....	177,917	4,193	23.6	( <sup>2</sup> )	1,519	8.5	( <sup>2</sup> )	297	71	( <sup>2</sup> )

<sup>1</sup> Not in the birth registration area in 1921.

<sup>2</sup> Population Jan. 1, 1920; no estimate made.

<sup>3</sup> Not in the death registration area in 1921.

## DEATH RATES IN A GROUP OF INSURED PERSONS.

COMPARISON OF DEATH RATES FOR PRINCIPAL CAUSES, APRIL AND MAY, 1923, AND MAY AND YEAR, 1922.

The accompanying table is taken from the Statistical Bulletin of the Metropolitan Life Insurance Co. for June, 1923, and presents the mortality experience of the industrial department of the company for the months of April and May, 1923, and May and year, 1922. The rates are based on a strength of approximately 14,500,000 insured persons.

The death rate for this group of persons declined 7.6 per cent in May from the rate for April and was 3 per cent lower than the rate for May, 1922.

With the exception of tuberculosis, which showed a slight rise, all of the diseases of numerical importance registered lower rates in May than in April, the largest declines being shown for influenza and pneumonia. Appreciable decreases were also shown for cancer, cerebral hemorrhage, organic heart diseases, and Bright's disease. The death rate for measles continued high during May, and it is stated that the mortality from that disease to date indicates that the death rate for 1923 for measles will be the highest that has been recorded for many years.

*Death rates (annual basis) for principal causes of death per 100,000 lives exposed, April and May, 1923, and May and year, 1922.*

Cause of death.	Death rate per 100,000 lives exposed.			
	May, 1923.	April, 1923.	May, 1922.	Year, 1922. <sup>1</sup>
Total, all causes.....	932.1	1,008.4	960.9	877.2
Typhoid fever.....	2.9	3.9	3.7	5.6
Measles.....	16.5	12.5	8.8	4.3
Scarlet fever.....	5.4	6.5	4.6	4.8
Whooping cough.....	5.4	6.8	2.3	2.6
Diphtheria.....	9.8	12.3	12.5	17.8
Influenza.....	24.4	47.7	20.8	21.5
Tuberculosis (all forms).....	121.8	119.0	130.4	113.4
Tuberculosis of respiratory system.....	111.9	109.0	118.5	102.9
Cancer.....	69.8	74.6	75.5	71.5
Diabetes mellitus.....	18.9	21.3	(3)	17.0
Cerebral hemorrhage.....	61.5	65.9	62.2	62.4
Organic diseases of heart.....	133.9	139.3	140.4	126.0
Pneumonia (all forms).....	82.9	108.2	81.9	73.3
Other respiratory diseases.....	14.2	15.7	17.5	13.6
Diarrhea and enteritis.....	6.4	8.7	7.8	10.7
Bright's disease (chronic nephritis).....	72.3	78.3	72.2	69.9
Puerperal state.....	19.3	18.0	18.4	18.9
Suicides.....	9.0	7.0	8.2	7.4
Homicides.....	5.3	6.6	6.0	6.2
Other external causes (excluding suicides and homicides).....	57.9	55.1	54.8	57.7
Traumatism by automobile.....	13.1	11.0	12.3	13.5
All other causes.....	194.4	201.1	233.1	172.6

<sup>1</sup> Based on provisional estimate of lives exposed to risk in 1922.

<sup>2</sup> Not available.



## DEATHS DURING WEEK ENDED JULY 7, 1923.

*Summary of information received by telegraph from industrial insurance companies for week ended July 7, 1923, and corresponding week of 1922. (From the Weekly Health Index, July 10, 1923, issued by the Bureau of the Census, Department of Commerce.)*

	Week ended July 7, 1923.	Corresponding week, 1922.
Policies in force.....	54,327,751	49,632,235
Number of death claims.....	8,263	6,245
Death claims per 1,000 policies in force, annual rate.....	7.9	6.6

*Deaths from all causes in certain large cities of the United States during the week ended July 7, 1923, infant mortality, annual death rate, and comparison with corresponding week of 1922. (From the Weekly Health Index, July 10, 1923, issued by the Bureau of the Census, Department of Commerce.)*

City.	Week ended July 7, 1923.		Annual death rate per 1,000, corre- sponding week, 1922.	Deaths under 1 year.		Infant mor- tality rate, week ended July 7, 1923. <sup>3</sup>
	Total deaths.	Death rate. <sup>1</sup>		Week ended July 7, 1923.	Corre- sponding week, 1922.	
Total.....	5,728	10.3	10.6	665	812	.....
Akron, Ohio.....	32	8.0	8.5	3	9	36
Albany, N. Y. <sup>2</sup> .....	28	12.4	14.8	5	2	111
Atlanta, Ga.....	81	18.9	17.1	14	11	.....
Baltimore, Md. <sup>2</sup> .....	181	12.2	15.0	16	42	47
Birmingham, Ala.....	52	13.8	17.5	6	10	.....
Boston, Mass.....	146	9.9	12.3	19	25	54
Bridgeport, Conn.....	18	6.5	6.5	3	1	41
Buffalo, N. Y.....	101	9.8	10.7	15	20	63
Cambridge, Mass.....	24	11.2	11.3	4	1	71
Camden, N. J. <sup>2</sup> .....	28	11.8	13.3	4	1	66
Chicago, Ill.....	505	9.1	8.4	54	72	.....
Cincinnati, Ohio.....	111	14.2	15.6	11	16	72
Cleveland, Ohio <sup>2</sup> .....	157	9.2	9.0	16	20	44
Columbus, Ohio.....	52	10.4	9.5	2	4	21
Dallas, Tex.....	36	10.6	13.0	5	4	.....
Dayton, Ohio.....	29	9.1	11.0	1	9	16
Denver, Colo.....	53	10.2	13.4	3	8	.....
Des Moines, Iowa.....	29	10.7	.....	1	.....	.....
Detroit, Mich.....	196	10.3	9.8	41	27	82
Duluth, Minn.....	10	4.9	.....	1	.....	23
Erie, Pa.....	27	12.5	8.6	1	0	20
Fall River, Mass. <sup>2</sup> .....	23	9.9	13.4	1	7	14
Flint, Mich.....	17	7.5	.....	3	.....	60
Fort Worth, Tex.....	14	5.1	8.6	0	2	.....
Grand Rapids, Mich.....	23	8.2	7.6	6	2	95
Houston, Tex.....	40	13.5	10.4	5	4	.....
Indianapolis, Ind.....	108	16.1	10.3	5	6	38
Jacksonville, Fla.....	41	21.4	13.9	6	3	.....
Kansas City, Kans.....	30	13.5	10.1	3	1	69
Kansas City, Mo.....	94	13.9	12.9	14	7	.....
Los Angeles, Calif.....	174	13.6	15.8	11	32	41
Lowell, Mass.....	22	10.0	10.5	3	5	52
Lynn, Mass.....	18	9.1	.....	3	.....	79
Memphis, Tenn.....	78	23.9	16.5	9	7	.....
Milwaukee, Wis.....	62	6.7	8.3	11	15	55
Minneapolis, Minn.....	71	9.0	10.0	8	13	43
Nashville, Tenn. <sup>2</sup> .....	48	20.7	16.3	10	4	.....
New Bedford, Mass.....	19	7.6	6.1	2	2	31
New Haven, Conn.....	35	10.6	10.7	2	7	26
New Orleans, La.....	112	14.4	14.9	16	16	.....
New York, N. Y.....	1,010	8.9	9.7	118	166	47
Bronx Borough.....	124	7.7	7.2	9	18	32
Brooklyn Borough.....	353	8.5	9.2	44	58	47
Manhattan Borough.....	429	9.9	11.2	59	74	57
Queens Borough.....	76	7.4	8.9	6	10	32
Richmond Borough.....	28	11.4	13.0	0	6	0
Newark, N. J.....	81	9.6	10.0	5	18	23

<sup>1</sup> Annual rate per 1,000 population.

<sup>2</sup> Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1922. Cities left blank are not in the registration area for births.

<sup>3</sup> Deaths for week ended Friday, July 6, 1923.



Deaths from all causes in certain large cities of the United States during the week ended July 7, 1923, infant mortality, annual death rate, and comparison with corresponding week of 1922. (From the Weekly Health Index, July 10, 1923, issued by the Bureau of the Census, Department of Commerce.)—Continued.

City.	Week ended July 7, 1923.		Annual death rate per 1,000, cor- responding week, 1922.	Deaths under 1 year.		Infant mor- tality rate, week ended July 7, 1923.
	Total deaths.	Death rate.		Week ended July 7, 1923.	Corre- sponding week, 1922.	
Norfolk, Va.	29	9.5	15.0	8	6	141
Oakland, Calif.	39	8.5	9.4	4	3	51
Omaha, Nebr.	52	13.3	12.2	3	2	32
Paterson, N. J.	28	10.5	10.2	0	4	0
Philadelphia, Pa.	329	8.9	10.5	42	50	54
Pittsburgh, Pa.	125	10.6	11.2	17	26	59
Portland, Oreg.	57	10.9	11.2	8	7	81
Providence, R. I.	53	11.4	9.1	15	2	122
Richmond, Va.	53	15.3	17.2	8	14	98
Rochester, N. Y.	50	8.2	9.9	2	6	16
St. Louis, Mo.	177	11.5	10.4	14	8	—
St. Paul, Minn.	46	9.9	8.5	5	7	46
Salt Lake City, Utah <sup>1</sup>	20	8.3	10.1	5	3	81
San Antonio, Tex.	48	13.5	14.3	9	16	—
San Francisco, Calif.	135	13.1	12.1	8	5	48
Seattle, Wash.	59	9.8	6.9	3	3	27
Spokane, Wash.	30	15.0	9.0	4	3	87
Springfield, Mass.	26	9.4	7.8	1	1	14
Syracuse, N. Y.	46	13.0	11.5	6	5	78
Tacoma, Wash.	16	8.2	—	2	—	50
Toledo, Ohio.	53	10.3	7.6	7	5	71
Trenton, N. J.	27	11.1	12.5	3	6	51
Utica, N. Y.	13	6.6	—	1	—	21
Washington, D. C.	102	12.2	10.4	12	13	69
Wilmington, Del.	19	8.4	9.5	1	6	20
Worcester, Mass.	38	10.3	11.1	1	4	11
Yonkers, N. Y.	13	6.3	8.9	2	6	43
Youngstown, Ohio.	31	12.2	9.1	8	2	109

<sup>1</sup> Deaths for week ended Friday, July 6, 1923.

# PREVALENCE OF DISEASE.

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring.*

## UNITED STATES.

### CURRENT STATE SUMMARIES.

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers.

#### Reports for Week Ended July 14, 1923.

ALABAMA.		CALIFORNIA.	
	Cases.		Cases.
Diphtheria.....	8	Cerebrospinal meningitis:	
Dysentery.....	52	San Francisco.....	1
Influenza.....	6	Visalia.....	1
Malaria.....	174	Diphtheria.....	62
Measles.....	86	Influenza.....	6
Paratyphoid fever.....	1	Lethargic encephalitis—San Diego.....	1
Pellagra.....	17	Measles.....	307
Pneumonia.....	8	Scarlet fever.....	42
Scarlet fever.....	1	Smallpox:	
Tuberculosis.....	25	Chino.....	11
Typhoid fever.....	101	Scattering.....	7
Whooping cough.....	16	Typhoid fever.....	7
		Typhus fever—Redlands.....	1
ARIZONA.		COLORADO.	
Diphtheria.....	1		
Measles.....	1	(Exclusive of Denver.)	
Mumps.....	1	Chicken pox.....	5
Scarlet fever.....	5	Diphtheria.....	4
Smallpox.....	3	Measles.....	38
Tuberculosis.....	35	Mumps.....	1
Typhoid fever.....	2	Rabies.....	1
Whooping cough.....	5	Scarlet fever.....	5
		Tuberculosis.....	152
ARKANSAS.		Typhoid fever.....	6
Diphtheria.....	1	Whooping cough.....	8
Hookworm disease.....	1		
Influenza.....	4	CONNECTICUT.	
Malaria.....	156		
Measles.....	37	Cerebrospinal meningitis.....	4
Mumps.....	2	Chicken pox.....	23
Ophthalmia neonatorum.....	1	Diphtheria.....	31
Paratyphoid fever.....	1	German measles.....	2
Pellagra.....	20	Influenza.....	1
Scarlet fever.....	3	Lethargic encephalitis.....	2
Smallpox.....	4	Malaria.....	1
Trachoma.....	2	Measles.....	51
Tuberculosis.....	20	Mumps.....	3
Typhoid fever.....	35	Pneumonia (lobar).....	6
Whooping cough.....	90	Scarlet fever.....	31

CONNECTICUT--continued.		KANSAS--continued.	
	Cases.		Cases.
Septic sore throat.....	1	Malaria.....	1
Tetanus.....	1	Measles.....	95
Tuberculosis (pulmonary).....	32	Mumps.....	7
Typhoid fever.....	7	Pneumonia.....	3
Whooping cough.....	114	Scarlet fever.....	23
		Septic sore throat.....	1
FLORIDA.		Smallpox.....	3
Diphtheria.....	5	Tuberculosis.....	66
Malaria.....	12	Typhoid fever.....	8
Ophthalmia neonatorum.....	1	Whooping cough.....	80
Pneumonia.....	1		
Typhoid fever.....	8	LOUISIANA.	
		Diphtheria.....	11
GEORGIA.		Malaria.....	14
Chicken pox.....	2	Measles.....	19
Conjunctivitis (infectious).....	2	Scarlet fever.....	1
Diphtheria.....	8	Smallpox.....	2
Dysentery (bacillary).....	1	Typhoid fever.....	23
Hookworm disease.....	7	Whooping cough.....	5
Influenza.....	4		
Malaria.....	34	MAINE.	
Measles.....	63	Chicken pox.....	5
Pneumonia.....	1	Diphtheria.....	5
Scarlet fever.....	2	German measles.....	1
Septic sore throat.....	2	Measles.....	65
Smallpox.....	1	Scarlet fever.....	12
Tuberculosis (pulmonary).....	6	Septic sore throat.....	5
Typhoid fever.....	33	Tuberculosis.....	3
Whooping cough.....	39	Typhoid fever.....	8
		Whooping cough.....	15
ILLINOIS.			
Cerebrospinal meningitis--Bureau County...	1	MARYLAND. <sup>1</sup>	
Diphtheria:		Anthrax.....	1
Cook County (including Chicago).....	60	Chicken pox.....	21
Chicago.....	63	Diphtheria.....	18
Scattering.....	24	Dysentery.....	11
Influenza.....	6	German measles.....	1
Pneumonia.....	103	Malaria.....	4
Polio-myelitis--Fulton County.....	1	Measles.....	223
Scarlet fever:		Mumps.....	8
Cook County (including Chicago).....	36	Paratyphoid fever.....	1
Chicago.....	32	Pneumonia (all forms).....	16
Scattering.....	20	Scarlet fever.....	27
Smallpox.....	10	Tetanus.....	1
Typhoid fever.....	21	Tuberculosis.....	75
Whooping cough.....	251	Typhoid fever.....	21
		Whooping cough.....	81
INDIANA.			
Diphtheria.....	9	MASSACHUSETTS.	
Influenza.....	4	Actinomyces.....	2
Measles.....	99	Cerebrospinal meningitis.....	3
Pneumonia.....	1	Chicken pox.....	69
Scarlet fever.....	12	Conjunctivitis (suppurative).....	12
Smallpox.....	18	Diphtheria.....	139
Tuberculosis.....	43	German measles.....	3
Typhoid fever.....	9	Influenza.....	1
		Measles.....	273
IOWA.		Mumps.....	82
Diphtheria.....	23	Ophthalmia neonatorum.....	24
Scarlet fever.....	19	Polio-myelitis.....	2
Smallpox.....	23	Pneumonia (lobar).....	14
Typhoid fever.....	1	Polio-myelitis.....	3
		Scarlet fever.....	108
KANSAS.		Smallpox.....	2
Chicken pox.....	8	Tetanus.....	2
Diphtheria.....	7	Trachoma.....	1

<sup>1</sup> Week ended Friday.

## MASSACHUSETTS—continued.

	Cases.
Tuberculosis (all forms).....	146
Typhoid fever.....	10
Whooping cough.....	138

## MICHIGAN.

Diphtheria.....	104
Measles.....	617
Pneumonia.....	64
Scarlet fever.....	135
Smallpox.....	17
Tuberculosis.....	357
Typhoid fever.....	19
Whooping cough.....	263

## MINNESOTA.

Chicken pox.....	4
Diphtheria.....	41
Influenza.....	1
Measles.....	56
Pneumonia.....	1
Scarlet fever.....	83
Smallpox.....	14
Tuberculosis.....	138
Typhoid fever.....	4
Whooping cough.....	9

## MISSISSIPPI.

Diphtheria.....	6
Smallpox.....	2
Typhoid fever.....	34

## MISSOURI.

Chicken pox.....	6
Diphtheria.....	37
Epidemic sore throat.....	1
Measles.....	121
Mumps.....	9
Poliomyelitis.....	1
Scarlet fever.....	20
Smallpox.....	5
Tetanus.....	3
Tuberculosis.....	45
Typhoid fever.....	22
Whooping cough.....	248

## MONTANA.

Rocky Mountain spotted fever—Forsyth.....	1
Scarlet fever.....	9
Smallpox.....	6

## NEW JERSEY.

Chicken pox.....	62
Diphtheria.....	66
Influenza.....	3
Malaria.....	6
Measles.....	197
Pneumonia.....	22
Poliomyelitis.....	5
Scarlet fever.....	31
Smallpox.....	1
Trachoma.....	1
Typhoid fever.....	10
Whooping cough.....	96

## NEW MEXICO.

Diphtheria.....	25
Malaria.....	1

1 Deaths.

## NEW MEXICO—continued.

	Cases.
Measles.....	8
Pneumonia.....	3
Tuberculosis.....	10
Typhoid fever.....	7
Whooping cough.....	1

## NEW YORK.

(Exclusive of New York City.)

Diphtheria.....	96
Lethargic encephalitis.....	4
Measles.....	970
Pneumonia.....	76
Poliomyelitis.....	2
Scarlet fever.....	137
Smallpox.....	3
Typhoid fever.....	19
Whooping cough.....	214

## NORTH CAROLINA.

Chicken pox.....	12
Diphtheria.....	19
German measles.....	1
Measles.....	400
Ophthalmia neonatorum.....	2
Scarlet fever.....	9
Septic sore throat.....	5
Smallpox.....	23
Typhoid fever.....	79
Whooping cough.....	324

## OREGON.

Chicken pox.....	2
Diphtheria.....	2
Influenza.....	2
Lethargic encephalitis.....	11
Measles.....	2
Pneumonia.....	15
Scarlet fever.....	10
Smallpox:	
Clackamas County.....	8
Portland.....	9
Scattering.....	5
Tuberculosis.....	12

## SOUTH DAKOTA.

Chicken pox.....	1
Diphtheria.....	4
Measles.....	23
Pneumonia.....	1
Poliomyelitis.....	1
Scarlet fever.....	12
Tuberculosis.....	13
Typhoid fever.....	2
Whooping cough.....	1

## TEXAS.

Chicken pox.....	7
Dengue.....	3
Diphtheria.....	15
Dysentery.....	8
Influenza.....	7
Leprosy.....	1
Measles.....	47

TEXAS—continued.		WEST VIRGINIA.	
	Cases.		Cases.
Mumps.....	2	Diphtheria.....	4
Paratyphoid fever.....	1	Scarlet fever.....	8
Pellagra.....	2	Typhoid fever.....	5
Pneumonia.....	2		
Rabies.....	1	WISCONSIN.	
Scarlet fever.....	7	Milwaukee:	
Smallpox.....	9	Cerebrospinal meningitis.....	1
Tuberculosis.....	21	Chicken pox.....	12
Typhoid fever.....	30	Diphtheria.....	12
Whooping cough.....	70	Measles.....	9
		Pneumonia.....	1
		Scarlet fever.....	30
		Tuberculosis.....	5
		Whooping cough.....	21
		Scattering:	
		Cerebrospinal meningitis.....	1
		Chicken pox.....	18
		Diphtheria.....	33
		Influenza.....	2
		Measles.....	323
		Ophthalmia neonatorum.....	1
		Pneumonia.....	1
		Poliomyelitis.....	2
		Scarlet fever.....	80
		Smallpox.....	8
		Tuberculosis.....	40
		Typhoid fever.....	3
		Whooping cough.....	96
		WYOMING.	
		Chicken pox.....	1
		Measles:	
		Natrona County.....	24
		Sheridan County.....	10
		Scattering.....	5
		Mumps.....	1
		Poliomyelitis.....	1
		Rocky Mountain spotted fever.....	2
		Tuberculosis.....	3
		Typhoid fever.....	2
		Whooping cough.....	1

## Reports for Week Ended July 7, 1923.

DISTRICT OF COLUMBIA.		NEW MEXICO—continued.	
	Cases.		Cases.
Chicken pox.....	18	Pneumonia.....	1
Diphtheria.....	2	Scarlet fever.....	1
Measles.....	27	Tuberculosis.....	9
Scarlet fever.....	6	Typhoid fever.....	13
Tuberculosis.....	25	Whooping cough.....	1
Whooping cough.....	15		
		NORTH DAKOTA.	
		Chicken pox.....	5
		Diphtheria.....	3
		Measles.....	31
		Scarlet fever.....	4
		Smallpox.....	2
		Tuberculosis.....	3
		Whooping cough.....	7

NEW MEXICO.	
Chicken pox.....	1
Diphtheria.....	19
Dysentery.....	1
Lethargic encephalitis.....	1
Measles.....	11
Paratyphoid fever.....	5

## SUMMARY OF CASES REPORTED MONTHLY BY STATES.

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week.

State.	Cerebrospinal meningitis.	Diphtheria.	Influenza.	Malaria.	Measles.	Pollagra.	Pollomyelitis.	Scarlet fever.	Smallpox.	Typhoid fever.
<i>May, 1923.</i>										
Montana.....	1	25	30	-----	117	-----	-----	62	34	11
New Mexico.....	79	3	-----	-----	141	-----	-----	25	16	2
Oklahoma.....	1	34	154	12	850	9	1	37	251	11
<i>June, 1923.</i>										
Arizona.....	-----	17	-----	-----	56	1	-----	64	4	11
Arkansas.....	1	18	24	397	537	76	-----	7	37	30
Florida.....	4	18	21	77	378	7	2	4	18	54
Massachusetts.....	5	613	11	2	2,985	-----	4	1,057	-----	44
New Jersey.....	7	345	3	18	2,442	-----	3	345	1	65
North Carolina.....	7	73	-----	-----	5,457	-----	2	60	239	149
Vermont.....	-----	16	-----	-----	924	-----	-----	37	6	4

## Cases of Certain Communicable Diseases Reported for the Month of May, 1923, by State Health Officers.

State.	Number of cases reported.								
	Chicken pox.	Diph- theria.	Measles.	Mumps.	Scarlet fever.	Small- pox.	Tuber- culosis.	Typhoid fever.	Whoop- ing cough.
Alabama.....	193	69	6,841	33	28	57	200	117	451
Arizona.....	15	20	163	18	68	6	686	8	6
Arkansas.....	111	9	1,479	50	15	53	54	38	-----
California.....	1,331	791	6,165	159	875	169	743	67	1,688
Colorado.....	113	216	2,332	140	172	2	83	12	233
Connecticut.....	220	225	1,035	82	348	1	175	12	295
Delaware.....	13	19	114	1	42	-----	13	1	17
District of Columbia.....	97	27	1,825	-----	137	0	122	7	179
Florida.....	43	59	664	4	7	21	151	89	115
Georgia <sup>1</sup> .....	-----	-----	-----	-----	-----	-----	-----	-----	-----
Idaho.....	31	16	13	3	11	3	53	-----	37
Illinois.....	743	678	12,049	925	739	67	1,609	54	947
Indiana.....	-----	162	5,421	-----	171	243	169	14	-----
Iowa.....	62	72	738	53	387	163	8	( <sup>2</sup> )	69
Kansas.....	189	109	3,347	298	175	53	254	22	240
Kentucky <sup>1</sup> .....	-----	-----	-----	-----	-----	-----	-----	-----	-----
Louisiana.....	16	53	345	17	12	80	181	64	118
Maine.....	61	19	833	5	143	21	48	6	108
Maryland.....	380	140	4,419	319	678	-----	179	35	588
Massachusetts.....	611	594	4,360	1,051	1,472	-----	762	51	1,240
Michigan.....	568	369	8,237	363	1,139	91	523	35	817
Minnesota.....	586	240	3,741	-----	707	117	351	21	173
Mississippi.....	349	40	3,996	143	23	9	263	125	1,300
Missouri <sup>1</sup> .....	-----	-----	-----	-----	-----	-----	-----	-----	-----
Montana.....	41	25	117	3	62	34	60	11	9
Nevada <sup>3</sup> .....	-----	-----	-----	-----	-----	-----	-----	-----	-----
New Hampshire <sup>3</sup> .....	-----	-----	-----	-----	-----	-----	-----	-----	-----
New Jersey.....	838	403	4,409	-----	617	3	485	20	449
New Mexico.....	28	79	141	12	25	16	77	2	34
New York.....	2,139	1,224	13,646	1,636	2,308	20	1,979	122	1,515
North Carolina.....	358	78	10,791	-----	78	385	-----	54	2,042
Ohio.....	830	500	11,003	166	1,534	313	680	59	929
Oklahoma.....	63	34	850	-----	37	251	61	11	-----
Oregon.....	95	70	13	23	63	111	58	9	147
Pennsylvania.....	1,317	689	11,819	701	1,153	32	621	52	1,252
Rhode Island.....	11	56	487	10	66	-----	110	-----	35
South Carolina.....	28	74	386	9	7	23	33	23	53
South Dakota.....	35	44	406	10	156	17	16	15	20
Tennessee <sup>3</sup> .....	-----	-----	-----	-----	-----	-----	-----	-----	-----
Texas <sup>1</sup> .....	-----	-----	-----	-----	-----	-----	-----	-----	-----
Utah <sup>3</sup> .....	-----	-----	-----	-----	-----	-----	-----	-----	-----
Vermont.....	-----	21	1,412	111	64	6	34	4	165
Virginia.....	389	131	9,893	-----	85	99	255	57	-----
Washington.....	306	91	370	123	127	170	286	18	516
West Virginia.....	69	79	2,765	-----	91	22	58	33	128
Wisconsin.....	247	211	5,449	-----	1,522	179	205	22	424
Wyoming.....	14	6	47	1	34	1	4	3	5

<sup>1</sup> Reports received weekly.<sup>2</sup> Not notifiable.<sup>3</sup> Reports received annually.

## Reported Cases per 1,000 Population (Annual Basis) for the Month of May, 1923.

State.	Case rates per 1,000 population.								
	Chicken pox.	Diph- theria.	Meas- les.	Mumps.	Scarlet fever.	Small- pox.	Tuber- culosis.	Typhoid fever.	Whoop- ing cough.
Alabama.....	0.95	0.34	33.23	0.16	0.14	0.28	0.97	0.57	2.19
Arizona.....	.46	.62	5.04	.56	2.10	.19	21.20	.25	.19
Arkansas.....	.72	.06	9.59	.32	.10	.34	.35	.25	3.37
California.....	4.12	2.45	19.08	.49	2.71	.52	2.30	.21	.....
Colorado.....	1.34	2.57	28.08	1.66	2.04	.02	.99	.14	2.77
Connecticut.....	1.75	1.79	8.25	.65	2.78	.01	1.40	.10	1.79
Delaware.....	.66	.97	5.82	.05	2.15	.....	.82	.05	.87
District of Columbia.....	2.40	.67	45.15	.....	3.39	.....	3.02	.17	4.43
Florida.....	.48	.33	7.47	.05	.08	.24	1.70	1.00	1.29
Georgia <sup>1</sup> .....	.....	.....	.....	.....	.....	.....	.....	.....	.93
Idaho.....	.78	.40	.33	.08	.28	.08	.58	.....	1.64
Illinois.....	1.29	1.18	20.89	1.69	1.28	.12	2.79	.09	.....
Indiana.....	.....	.63	21.18	.....	1.06	.95	.43	.05	.....
Iowa.....	.30	.34	3.52	.25	1.85	.73	.04	(?)	.33
Kansas.....	1.24	.71	21.92	1.95	1.15	.35	1.66	.14	1.57
Kentucky <sup>1</sup> .....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Louisiana.....	.10	.34	2.20	.11	.08	.51	1.15	.41	.75
Maine.....	.92	.29	12.62	.08	2.17	.32	.73	.09	1.64
Maryland.....	2.97	1.10	34.56	2.50	5.30	.....	1.40	.27	4.60
Massachusetts.....	1.79	1.74	12.75	3.07	4.30	.....	2.23	.15	3.63
Michigan.....	1.68	1.67	24.38	1.07	3.34	.27	1.55	.10	2.42
Minnesota.....	1.35	1.13	17.62	.....	3.33	.55	1.65	.10	.81
Mississippi.....	2.30	.26	26.31	.94	.15	.06	1.73	.82	8.56
Missouri.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Montana.....	.79	.48	2.25	.06	1.19	.65	1.16	.21	.17
Nevada <sup>2</sup> .....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Hampshire <sup>3</sup> .....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Jersey.....	2.92	1.40	15.33	.....	2.15	.01	1.69	.07	1.56
New Mexico.....	.89	2.50	4.46	.38	.79	.51	2.44	.06	1.08
New York.....	2.32	1.33	14.82	1.78	2.51	.02	2.15	.13	1.64
North Carolina.....	1.57	.34	47.20	.....	.34	1.69	.....	.27	8.95
Ohio.....	1.60	.66	21.19	.32	2.95	.60	1.31	.11	1.79
Oklahoma.....	.94	.19	4.63	.....	.20	1.37	.35	.06	.....
Oregon.....	1.36	1.00	.19	.33	.90	1.59	.83	.03	2.10
Pennsylvania.....	1.70	1.21	15.29	.91	1.49	.04	.80	.12	1.62
Rhode Island.....	.21	1.05	9.15	.19	1.80	.....	2.07	.06	.66
South Carolina.....	.19	.50	2.61	.06	.05	.16	.22	.18	.36
South Dakota.....	.63	.79	7.29	.18	2.90	.31	.29	.23	.36
Tennessee <sup>2</sup> .....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texas <sup>1</sup> .....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Utah <sup>3</sup> .....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Vermont.....	.....	.70	47.34	3.72	2.15	.20	1.14	.13	5.53
Virginia.....	.....	.64	48.57	.....	.42	.49	1.45	.29	.....
Washington.....	2.51	.75	3.04	1.01	1.04	1.40	2.35	.15	4.24
West Virginia.....	.52	.60	20.90	.....	.69	.17	.44	.25	.97
Wisconsin.....	1.06	.91	23.42	.....	6.54	.77	.88	.09	1.82
Wyoming.....	.78	.33	2.61	.06	1.89	.06	.22	.17	.28

<sup>1</sup> Reports received weekly.<sup>2</sup> Not notifiable.<sup>3</sup> Reports received annually.

## CITY REPORTS FOR WEEK ENDED JUNE 30, 1923.

## ANTHRAX.

City.	Cases.	Deaths.
Louisiana:		
New Orleans.....	1	.....



## CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.

## CEREBROSPINAL MENINGITIS.

The column headed "Median for previous years" gives the median number of cases reported during the corresponding week of the years 1915 to 1922, inclusive. In instances in which data for the full eight years are incomplete, the median is that for the number of years for which information is available.

City.	Median for previous years.	Week ended June 30, 1923.		City.	Median for previous years.	Week ended June 30, 1923.	
		Cases.	Deaths.			Cases.	Deaths.
California:				Minnesota:			
Alameda.....	0	1	.....	Duluth.....	0	1	.....
Los Angeles.....	0	1	.....	Minneapolis.....	0	1	1
San Francisco.....	1	1	.....	New York:			
Colorado:				Lackawanna.....	0	1	.....
Pueblo.....	0	1	.....	New York.....	6	3	1
Illinois:				Ohio:			
Chicago.....	2	2	.....	Canton.....	0	.....	1
Maryland:				Cleveland.....	1	1	1
Baltimore.....	0	1	.....	Pennsylvania:			
Massachusetts:				Philadelphia.....	1	2	1
Boston.....	1	1	2	Wisconsin:			
Michigan:				Milwaukee.....	0	1	1
Kalamazoo.....	0	.....	1				

## DIPHTHERIA.

See p. 1654; also Current State summaries, p. 1643, and Monthly summaries, by States, p. 1647.

## INFLUENZA.

City.	Cases.		Deaths, week ended June 30, 1923.	City.	Cases.		Deaths, week ended June 30, 1923.
	Week ended July 1, 1922.	Week ended June 30, 1923.			Week ended July 1, 1922.	Week ended June 30, 1923.	
Alabama:				Massachusetts:			
Birmingham.....		1	.....	Holyoke.....	1	.....	.....
Arkansas:				Springfield.....		1	.....
Little Rock.....		1	.....	Michigan:			
California:				Detroit.....			1
Los Angeles.....		3	1	Missouri:			
Oakland.....	2	.....	.....	Kansas City.....		1	1
Connecticut:				New Jersey:			
New Haven.....		1	.....	Newark.....	4	.....	.....
Florida:				New York:			
Tampa.....	3	.....	.....	New York.....	6	3	2
Georgia:				Ohio:			
Atlanta.....		1	.....	Cleveland.....			1
Illinois:				East Cleveland.....	1	.....	.....
Chicago.....	1	1	1	Pennsylvania:			
Danville.....	1	.....	.....	Philadelphia.....		1	1
Freeport.....		1	.....	Tennessee:			
Springfield.....	1	.....	.....	Memphis.....		2	2
Indiana:				Nashville.....			1
Indianapolis.....			2	Texas:			
Kentucky:				San Antonio.....		1	.....
Louisville.....	1	.....	.....				
Louisiana:							
New Orleans.....		1	.....				

## LETHARGIC ENCEPHALITIS.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Nebraska:			Wisconsin:		
Omaha.....		1	Eau Claire.....	1	.....
Oregon:			Kenosha.....	1	.....
Portland.....		1	Milwaukee.....	2	.....

## CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.

## MALARIA.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Alabama:			Maryland:		
Birmingham.....	5	2	Baltimore.....	1	
Mobile.....	1		Michigan:		
Montgomery.....	1		Muskegon.....	1	
Arkansas:			Missouri:		
Little Rock.....	3		Kansas City.....	1	
California:			New Jersey:		
Berkeley.....	1		Hoboken.....	1	
Los Angeles.....	1		New York:		
Connecticut:			New York.....	1	
New Haven.....	1		Oklahoma:		1
New London.....	1		Tennessee:		
Georgia:			Memphis.....	7	
Albany.....	1		Texas:		
Augusta.....	3		Beaumont.....		1
Macon.....	1		San Antonio.....		2
Rome.....	2		Virginia:		
Louisiana:			Danville.....	1	
New Orleans.....	1				

## MEASLES.

See p. 1654; also Current State summaries, p. 1643, and Monthly summaries by States, p. 1647.

## PELLAGRA.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Alabama:			North Carolina:		
Birmingham.....	1		Durham.....		1
Arkansas:			Oklahoma:		
Little Rock.....	1		Oklahoma.....		1
North Little Rock.....	1		South Carolina:		
California:			Columbia.....		4
Oakland.....		1	Tennessee:		
Georgia:			Memphis.....		1
Macon.....	1		Nashville.....	1	
Louisiana:			Texas:		
New Orleans.....	1	1	Dallas.....		1

## PNEUMONIA (ALL FORMS).

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Alabama:			Georgia:		
Birmingham.....		6	Atlanta.....	12	10
Mobile.....		1	Augusta.....		2
Montgomery.....		1	Savannah.....	1	
Arkansas:			Illinois:		
Little Rock.....	1		Bloomington.....		1
California:			Chicago.....	162	39
Berkeley.....	1		East St. Louis.....		1
Glendale.....		1	Freeport.....	2	
Los Angeles.....	22	16	Jacksonville.....		1
Oakland.....		2	Oak Park.....		1
Pasadena.....		1	Pekin.....	1	
Riverside.....		2	Indiana:		
Sacramento.....		3	Anderson.....		3
San Bernardino.....		1	East Chicago.....		2
San Diego.....		2	Fort Wayne.....		1
San Francisco.....	11	4	Frankfort.....		1
Santa Barbara.....		1	Hammond.....		1
Stockton.....		1	Indianapolis.....		6
Colorado:			Logansport.....		1
Denver.....		5	Muncie.....		1
Connecticut:			Iowa:		
Bristol.....		1	Muscatine.....	1	
New Haven.....		1	Kansas:		
Waterbury.....	3	2	Kansas City.....	4	
District of Columbia:			Wichita.....		1
Washington.....		8	Kentucky:		
Florida:			Covington.....		3
Tampa.....	1		Lexington.....		1
			Louisville.....		5

## CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.

## PNEUMONIA (ALL FORMS)—Continued.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Louisiana:			New York—Continued.		
New Orleans.....	9	8	Cohoes.....	1	
Maine:			Geneva.....		1
Biddeford.....		1	Glens Falls.....		1
Lewiston.....		1	Ithaca.....	3	
Portland.....	1		Lackawanna.....	6	3
Sanford.....		1	Mount Vernon.....	2	
Maryland:			New York.....	112	80
Baltimore.....	16	11	Niagara Falls.....		1
Cumberland.....	2		Rochester.....	8	3
Massachusetts:			Rome.....	2	
Boston.....		12	Schenectady.....	3	1
Cambridge.....	2		Syracuse.....	11	2
Everett.....	1		Troy.....		2
Fall River.....			Watertown.....	3	
Greenfield.....		1	Yonkers.....		2
Haverhill.....		2	North Carolina:		
Holyoke.....		2	Greensboro.....		1
Lawrence.....		1	Raleigh.....		1
Lowell.....		4	Wilmington.....		2
New Bedford.....		6	Winston-Salem.....		1
Somerville.....		1	Ohio:		
Southbridge.....		1	Akron.....	2	
Taunton.....		2	Cincinnati.....	17	15
Watertown.....	2		Cleveland.....	22	8
Worcester.....		5	Columbus.....		5
Michigan:			Dayton.....	1	
Detroit.....	43	31	Hamilton.....		1
Flint.....		2	Mansfield.....		1
Grand Rapids.....	5		Newark.....		1
Highland Park.....	1		Niles.....	2	
Jackson.....		1	Toledo.....		3
Kalamazoo.....	1		Youngstown.....		6
Muskegon.....		1	Oregon:		
Pontiac.....	1		Portland.....		2
Port Huron.....	2		Pennsylvania:		
Saginaw.....		1	Philadelphia.....	48	30
Sault Ste. Marie.....	1		Pittsburgh.....		24
Minnesota:			Rhode Island:		
Duluth.....		3	Cranston.....		1
St. Paul.....		4	Cumberland.....		1
Missouri:			Providence.....		4
Kansas City.....		3	South Carolina:		
St. Joseph.....		4	Charleston.....		2
Montana:			Columbia.....		1
Missoula.....		1	Tennessee:		
Nebraska:			Memphis.....		2
Lincoln.....	1		Nashville.....		2
Omaha.....		4	Texas:		
Nevada:			El Paso.....		2
Reno.....		1	Houston.....		4
New Hampshire:			San Antonio.....		1
Concord.....		1	Utah:		
Manchester.....		1	Provo.....	3	1
New Jersey:			Salt Lake City.....		2
Bayonne.....	1		Vermont:		
East Orange.....	2		Burlington.....		1
Elizabeth.....		2	Virginia:		
Hoboken.....		2	Alexandria.....	1	
Kearny.....	1		Charlottesville.....		1
Montclair.....	1		Norfolk.....		3
Morristown.....	1		Petersburg.....		1
Newark.....	13	5	Richmond.....		6
Paterson.....	1		Roanoke.....		1
Perth Amboy.....		1	West Virginia:		
Plainfield.....		1	Charleston.....		1
Trenton.....		3	Wheeling.....		1
West New York.....		1	Wisconsin:		
New Mexico:			Janesville.....		1
Albuquerque.....		1	Kenosha.....		1
New York:			Coshkosh.....		1
Albany.....	7		Superior.....		2
Buffalo.....		7			

## CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.

## POLIOMYELITIS (INFANTILE PARALYSIS).

The column headed "Median for previous years" gives the median number of cases reported during the corresponding week of the years 1915 to 1922, inclusive. In instances in which data for the full eight years are incomplete, the median is that for the number of years for which information is available.

City.	Median for previous years.	Week ended June 30, 1923.		City.	Median for previous years.	Week ended June 30, 1923.	
		Cases.	Deaths.			Cases.	Deaths.
Illinois:				New York:			
Evanston.....	0	1	.....	New York.....	3	3	2
Louisiana:				Yonkers.....	0	1	1
New Orleans.....	0	1	.....	Pennsylvania:			
Massachusetts:				Washington.....	0	1	.....
Lowell.....	0	2	1	Texas:			
				Houston.....	0	1	.....

## RABIES IN ANIMALS.

City.	Cases.	City.	Cases.
California:		New Jersey:	
Los Angeles.....	15	Montclair.....	1
Kentucky:		Texas:	
Louisville.....	1	Dallas.....	1

## SCARLET FEVER.

See p. 1654; also Current State summaries, p. 1643, and Monthly summaries by States, p. 1647.

## SMALLPOX.

The column headed "Median for previous years" gives the median number of cases reported during the corresponding week of the years 1915 to 1922, inclusive. In instances in which data for the full eight years are incomplete, the median is that for the number of years for which information is available.

City.	Median for previous years.	Week ended June 30, 1923.		City.	Median for previous years.	Week ended June 30, 1923.	
		Cases.	Deaths.			Cases.	Deaths.
California:				Ohio:			
Los Angeles.....	1	5	.....	Barberton.....	0	2	.....
Georgia:				Marion.....	0	1	.....
Atlanta.....	4	8	.....	Middletown.....	0	1	.....
Savannah.....	0	2	.....	Sandusky.....	0	1	.....
Illinois:				Oklahoma:			
Chicago.....	1	3	.....	Oklahoma.....	3	3	.....
Indiana:				Oregon:			
Fort Wayne.....	0	1	.....	Portland.....	6	9	.....
Huntington.....	0	1	.....	Pennsylvania:			
Indianapolis.....	4	5	.....	Johnstown.....	0	1	.....
Logansport.....	0	1	.....	Philadelphia.....	0	1	.....
Mishawaka.....	0	4	.....	Tennessee:			
Muncie.....	0	4	.....	Chattanooga.....	0	2	.....
South Bend.....	0	2	.....	Knoxville.....	0	2	.....
Iowa:				Memphis.....	1	1	.....
Davenport.....	0	7	.....	Texas:			
Waterloo.....	1	1	.....	Dallas.....	0	1	.....
Michigan:				Fort Worth.....	1	1	.....
Detroit.....	7	7	.....	Houston.....	2	1	.....
Highland Park.....	0	1	.....	San Antonio.....	.....	8	4
Holland.....	0	1	.....	Vermont:			
Port Huron.....	0	1	.....	Burlington.....	0	1	.....
Minnesota:				Virginia:			
Hibbing.....	0	1	.....	Lynchburg.....	0	1	.....
Hibbing.....	11	2	.....	Roanoke.....	0	2	.....
Minneapolis.....	3	2	.....	Washington:			
St. Paul.....	.....	.....	.....	Aberdeen.....	3	1	.....
Missouri:				Seattle.....	4	2	.....
Kansas City.....	4	2	.....	Wisconsin:			
Montana:				Kenosha.....	0	6	.....
Great Falls.....	4	1	.....				
North Carolina:							
Winston-Salem.....	0	4	.....				

## CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.

## TETANUS.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Georgia:			Pennsylvania:		
Augusta.....		1	Pittsburgh.....	2	1
Illinois:			South Carolina:		
Chicago.....	1		Charleston.....		1
Massachusetts:			Texas:		
North Adams.....	1		Dallas.....		1
Waltham.....	1		San Antonio.....		1

## TUBERCULOSIS.

See p. 1654; also Current State summaries, p. 1643.

## TYPHOID FEVER.

The column headed "Median for previous years" gives the median number of cases reported during the corresponding week of the years 1915 to 1922, inclusive. In instances in which data for the full eight years are incomplete, the median is that for the number of years for which information is available.

City.	Median for pre- vious years.	Week ended June 30, 1923.		City.	Median for pre- vious years.	Week ended June 30, 1923.	
		Cases.	Deaths.			Cases.	Deaths.
Alabama:				Michigan—Continued.			
Birmingham.....	2	1		Grand Rapids.....	1	2	
Mobile.....	2	1	1	Jackson.....	0	1	
Montgomery.....	1	1		Muskegon.....	0		1
California:				Minnesota:			
Berkeley.....	0	1		Duluth.....	0	1	
Los Angeles.....	1	7	1	St. Paul.....	0	2	
Oakland.....	1		2	Missouri:			
Sacramento.....	1		1	St. Louis.....	3	1	1
San Francisco.....	1	1		Nebraska:			
Stockton.....	0	1		Omaha.....	0		1
Connecticut:				New Hampshire:			
Bridgeport.....	0	1		Nashua.....	0	1	
Waterbury.....	0	1		New Jersey:			
District of Columbia:				Morristown.....	0		1
Washington.....	1	2		Newark.....	1	1	
Georgia:				New Mexico:			
Atlanta.....	5	5		Albuquerque.....	0	1	1
Augusta.....	0	5		New York:			
Brunswick.....	0	1		Albany.....	0	2	
Macon.....	4	1		Glens Falls.....	0	1	
Illinois:				New York.....	19	12	2
Aurora.....	0	1		Syracuse.....	0		
Chicago.....	5	4		North Carolina:			
Jacksonville.....	0	1		Greensboro.....	0	2	
Indiana:				Ohio:			
Indianapolis.....	1	2		Ashtabula.....	0	1	
Logansport.....	0	1		Bellair.....	0	1	
Kansas:				Cambridge.....	0	1	1
Kansas City.....	1	2		Cincinnati.....	2	1	
Kentucky:				Cleveland.....	2		
Henderson.....	0		1	Columbus.....	0	1	
Louisville.....	3	4		Toledo.....	2	3	1
Louisiana:				Oklahoma:			
New Orleans.....	9	4	1	Oklahoma.....	0	3	
Maine:				Pennsylvania:			
Bangor.....	0	1		Butler.....	0	2	
Biddeford.....	0	1		Easton.....	0	1	
Portland.....	1	1		Farrell.....	0	4	
Maryland:				New Castle.....	0	1	
Baltimore.....	4	3		Norristown.....	0	1	
Massachusetts:				Pottsville.....	0	1	
Boston.....	2	2		Washington.....	0	1	
Fall River.....	2	4		York.....	0	1	
Lovell.....	0	1	1	South Carolina:			
Quincy.....	0	2		Charleston.....	6	2	
Somerville.....	0	1		Columbia.....	1	1	
Michigan:				Tennessee:			
Alpena.....	0	1		Chatanooga.....	0	1	
Detroit.....	5	2	1	Knoxville.....	5	1	





## CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.

## DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City.	Popula- tion Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Georgia:										
Albany.....	11,555				2				2	
Atlanta.....	200,616	63	3		7	2	2		7	2
Augusta.....	52,548	27			15				1	5
Brunswick.....	14,413	1								
Macon.....	52,995				6		1			
Rome.....	13,252				9		1			
Savannah.....	83,232	27	1		7	1			5	2
Idaho:										
Boise.....	21,393	7			1					
Illinois:										
Alton.....	24,682	12			2		1			1
Aurora.....	39,397	11			6		1			4
Bloomington.....	28,725	15			5				4	
Blue Island.....	11,424	5	1		17					
Centralia.....	12,491	4			2					
Chicago.....	2,701,705	623	78		219	9	33		230	51
Cicero.....	44,995	5	1		1					
East St. Louis.....	66,767	17	1				1		1	2
Elgin.....	27,454	7			10					1
Evanston.....	37,234	10			21					
Freeport.....	19,669	9			14		3			
Galesburg.....	23,134	10								
Jacksonville.....	15,713	8							1	1
Kewanee.....	16,025	4			3				1	
La Salle.....	13,050	3								
Mattoon.....	13,552		1		4					
Oak Park.....	39,855	8			26					
Peoria.....	76,121	25								
Quincy.....	35,978	14			6		1		1	
Rock Island.....	35,177	2			32					
Springfield.....	59,183	13			2				2	
Indiana:										
Anderson.....	29,767	6								1
Bloomington.....	11,595	9					1		1	2
Crawfordsville.....	10,139	3								1
East Chicago.....	35,967	9			5		2			1
Elwood.....	10,790	3								1
Fort Wayne.....	86,549	28	1	1			3			1
Frankfort.....	11,585	2								
Hammond.....	36,004	13	1		6		1			
Huntington.....	14,000	4			4		1			
Indianapolis.....	314,194	85	4		106				7	7
Kokomo.....	30,067	11	1		3					1
La Fayette.....	22,486	3			11					
Logansport.....	21,626	4	1		2					
Michigan City.....	19,457	8								1
Mishawaka.....	15,195	2								
Muncie.....	36,524	9			34		1		3	
South Bend.....	70,983	8	2				2		5	
Terre Haute.....	66,083	19			1		2			
Iowa:										
Burlington.....	24,057	7			4					
Cedar Rapids.....	45,566						1			
Davenport.....	56,727	1	2		14			1		
Des Moines.....	126,468		1		2					
Dubuque.....	39,141		1		2					
Iowa City.....	11,267		1				1			
Muscatine.....	16,068	3								
Ottumwa.....	23,003		3							
Sioux City.....	71,227				3					
Waterloo.....	36,230	1	3	1	2					
Kansas:										
Atchison.....	12,630						1			
Coffeyville.....	13,452	4	1		1					
Fort Scott.....	10,693	7								
Kansas City.....	101,177				63				6	
Lawrence.....	12,456	1			1					
Topeka.....	50,622	9	1		51				1	
Wichita.....	72,217	23			34					
Kentucky:										
Covington.....	57,121	23			10		1		1	3
Henderson.....	12,169	7								1
Lexington.....	41,534	12			4					2



## CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.

## DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Kentucky—Continued.										
Louisville.....	234,891	72	1		15	1	1		23	7
Owensboro.....	17,424		1						1	
Louisiana:										
New Orleans.....	387,219	125	5		7				19	11
Maine:										
Auburn.....	16,985	1			8		1			
Bangor.....	25,978				8				1	
Bath.....	14,731	3								
Biddeford.....	18,008	2								
Lewiston.....	31,791	13			10		2			
Portland.....	69,272	14	4		1		2			2
Sanford (town).....	10,691	9								
Waterville.....	13,351		1		1				1	
Maryland:										
Baltimore.....	733,826	204	13	1	170	1	40		43	17
Cumberland.....	29,137	4			2					
Frederick.....	11,066	6	1		5		1		1	
Massachusetts:										
Adams (town).....	12,967	3							1	
Amesbury (town).....	10,036	3								
Arlington (town).....	18,665	2	2		4		1		2	
Attleboro.....	19,731	7								
Belmont (town).....	10,749	2			19				3	
Beverly.....	22,561	4					2		1	
Boston.....	748,060	201	58	1	110	2	52		42	29
Braintree (town).....	10,550	2			24					
Brockton.....	66,254	3	2		30		1		2	1
Brookline.....	37,748	11	1		2		1		2	
Cambridge.....	109,694	23	1		13		4	1	4	1
Chelsea.....	43,184	13	1		2		4			
Chicopee.....	36,214	6	1						1	1
Clinton.....	12,979	7								
Dedham.....	10,792	2								
Easthampton.....	11,261				1		1			
Everett.....	40,120	4	1		3		2		2	
Fall River.....	129,485	18			4		3		4	2
Framingham.....	17,033	6			1		1		1	1
Gardner.....	16,971	2			3		1		1	
Greenfield.....	15,462	2								
Haverhill.....	53,884	6	1		18		5		1	
Holyoke.....	60,203	15	2		3		4		2	
Lawrence.....	94,270	12	1		15		1		1	
Leominster.....	19,744	3			19				1	1
Lowell.....	112,759	32			8		6		4	
Lynn.....	99,148	12	5		1		2		2	
Medford.....	39,038	14	2		1		1			
Melrose.....	18,204	3	1		14		1	1	1	
Methuen.....	15,180	10			5		1		6	1
New Bedford.....	121,217	33	2		1				9	
Newburyport.....	15,618	5			6					
Newton.....	46,054	10			13		4		1	
North Adams.....	22,282	3								
Northampton.....	21,951	8					2			
Peabody.....	19,552	1	1				1		1	
Pittsfield.....	41,763	4								
Plymouth.....	13,045	2								
Quincy.....	47,876	7			8		9		3	
Salem.....	42,539	0	7						2	
Saugus.....	10,874	1			2				1	
Somerville.....	66,091	15	4	1	3		2		4	1
Southbridge.....	14,245	3			12	1				
Springfield.....	129,614	25	2		3		3		8	2
Taunton.....	37,137	10			3		4		4	
Warefield.....	13,025	1							1	1
Waltham.....	39,915	7			2				1	1
Watertown.....	21,457	1	4		19		1			
West Springfield.....	13,443	1								
Westfield.....	18,604	4		1						
Winthrop.....	15,455	5	4		1					
Woburn.....	16,574	3								
Worcester.....	179,754	31	4				17		3	3

## CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.

**DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.**

City.	Popula- tion Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.		
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
Michigan:											
Ann Arbor.....	19,516	21			58						
Battle Creek.....	36,164	0	1		37		3				
Detroit.....	963,678	257	29	4	147	5	24		65	2	
Flint.....	91,599	20	4		48		2	1	3		
Grand Rapids.....	137,634	32	3		124		1		1	1	
Highland Park.....	46,499	13	1		12		2				
Holland.....	12,183	2		1	1		3		1		
Ironwood.....	15,739	3	2				1				
Jackson.....	48,374	11			12		2				
Kalamazoo.....	48,487	14	3		40					1	
Marquette.....	12,718	4					1				
Muskegon.....	36,570	12	1		13						
Pontiac.....	34,273	12	4		19		7		3		
Port Huron.....	25,944	6			6					1	
Saginaw.....	61,903	13			56		2		3		
Sault Ste. Marie.....	12,096	3									
Minnesota:											
Duluth.....	98,917	12	2		3		6		1	1	
Hibbing.....	15,089		2								
Minneapolis.....	380,582	71	7		35	2	15		19	7	
Rochester.....	13,722	16			2						
St. Cloud.....	15,873		3				1		1		
St. Paul.....	234,098	54	17	2	15		3		5	3	
Winona.....	19,143	6			2						
Missouri:											
Cape Girardeau.....	10,252	4			3						
Joplin.....	29,902										
Kansas City.....	321,410	95	5		73		3	1	11	6	
St. Joseph.....	77,939	31	3		19						
St. Louis.....	772,897	221	17		12	1	3		37	11	
Springfield.....	39,631	7								1	
Montana:											
Billings.....	15,100	5							1	1	
Great Falls.....	24,121	4									
Helena.....	12,037	2			5						
Missoula.....	12,608	11					1		1	1	
Nebraska:											
Lincoln.....	54,948	17			7				1		
Omaha.....	191,601	51	6		5		1				
Nevada:											
Reno.....	12,016	4									
New Hampshire:											
Concord.....	22,167	6			28		2		1		
Dover.....	13,029	1									
Keene.....	11,210	2			7		1				
Manchester.....	78,384	20	1							2	
Nashua.....	28,379	9			24				1	1	
New Jersey:											
Asbury Park.....	12,400	2			1						
Bayonne.....	76,754								2		
Belle Mead.....	15,660				4						
Bloomfield.....	22,019	2					2		1		
Clifton.....	26,470	4			1						
East Orange.....	50,710	9			17				1	1	
Elizabeth.....	95,783		3	1	1		1		1	1	
Englewood.....	11,627	4			5		1		1		
Garfield.....	19,381	6	1				1			1	
Hackensack.....	17,667	3			8				1		
Hoboken.....	68,166	21	3	1	1			1	2	1	
Jersey City.....	238,103		8		2		5		9		
Kearny.....	23,724	3	1		2						
Montclair.....	28,810	6			17						
Morristown.....	12,548	4							1		
Newark.....	414,524	83	11		58		8		33	13	
Orange.....	33,268	4	2				1				
Passaic.....	63,841	8	1		2				1	1	
Paterson.....	135,875		7		37		1		12		
Perth Amboy.....	41,707	3	3		2		1		4		
Phillipsburg.....	16,923	4							1		
Plainfield.....	27,700	2			3				1	1	
Summit.....	10,174	10									
Trenton.....	119,289	54	8				1		2	5	
Union (town).....	20,651						1				

## CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.

## DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
New Jersey—Continued.										
West Hoboken.....	40,074	3	2		6					
West New York.....	29,926	7			1					
West Orange.....	15,573	2			1		1			
New Mexico:										
Albuquerque.....	15,157	9	1							2
New York:										
Albany.....	113,344		1		77		5		8	
Amsterdam.....	33,324	2	1		17					
Auburn.....	36,192	5			5				1	2
Buffalo.....	506,775	108	7		47		17		19	8
Cohoes.....	22,987	7			9					
Dunkirk.....	19,336	4			6					
Geneva.....	14,648	6								
Glens Falls.....	16,638	1					1			
Hornell.....	15,025	2			18		1		1	
Hudson.....	11,745	3	1				1			1
Ithaca.....	17,094	6			24					
Lackawanna.....	17,918	5			51					
Little Falls.....	13,029	0								
Middletown.....	18,420								2	
Mount Vernon.....	42,728	16					1		1	
New York.....	5,620,048	1,213	198	12	447	7	120	1	196	181
Newburgh.....	30,386	6			1					
Niagara Falls.....	50,760	19	1		16	1	3			
North Tonawanda.....	15,482	4	1		6		1			
Peekskill.....	15,868	4								1
Rochester.....	295,750	57	6		42	2	10		12	4
Rome.....	23,341	4			4		2			1
Saratoga Springs.....	13,181	4								
Schenectady.....	88,723	19	1		61	2			7	1
Syracuse.....	171,717	48	7		206	3	3		2	
Troy.....	72,013	17	2		7		1		3	1
Watertown.....	31,285	10			35		1		3	2
White Plains.....	21,031	2			3		1			
Yonkers.....	100,176	23	2	1	9	1	4			2
North Carolina:										
Durham.....	21,719	7			3					2
Greensboro.....	43,525	13			18		1			1
Raleigh.....	24,418	21			4					1
Rocky Mount.....	12,742	8								
Salisbury.....	13,884	3								
Wilmington.....	33,372	10			9					
Winston-Salem.....	48,395	22			126		1		5	1
North Dakota:										
Grand Forks.....	14,010				1		2			
Ohio:										
Akron.....	208,435	12	3		9					
Alliance.....	21,603	5					1			
Ashtabula.....	22,082	3							1	
Barberton.....	18,811	2								1
Bellaire.....	15,061	3			2		3		2	
Bucyrus.....	10,425	4	2		1		1			1
Cambridge.....	13,104	2	1				1		1	1
Canton.....	87,091	10			9					
Cincinnati.....	401,247	125	2		79	1	4		34	6
Cleveland.....	795,841	177	25		119		23	1	30	16
Cleveland Heights.....	15,236								1	
Columbus.....	237,031	65			7		5		7	6
Coshocton.....	10,847								1	
Dayton.....	152,559	33	5		2		4		1	
East Cleveland.....	27,292	5			2					
East Youngstown.....	11,237	2								
Findlay.....	17,021	7					1			
Fremont.....	12,468	3			2		1			
Hamilton.....	39,675	12								
Kenmore.....	12,683				5				1	
Lancaster.....	14,706	7			1	1	1			1
Lorain.....	37,295				2		1		2	
Mansfield.....	27,824	4			11					
Marion.....	27,891						1			
Martins Ferry.....	11,634	2								
Middletown.....	23,594	2	1							

1 Pulmonary only.

## CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.

## DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City.	Popula- tion Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Ohio—Continued.										
New Philadelphia.....	10,718				7		1			
Newark.....	26,718	9			5					1
Niles.....	13,080	2			1					
Norwood.....	24,966	3			2				1	
Piqua.....	15,044	5								
Salem.....	10,503	3	2							
Sandusky.....	22,897	13			11					
Springfield.....	69,840	11			1					1
Steubenville.....	28,508	10								
Tiffin.....	14,375	4			1		1		1	
Toledo.....	243,164	58	5		3				1	
Youngstown.....	132,358	28	19	3	17		18	1	6	5
Zanesville.....	29,569	9	1		27	1	2		2	1
Oklahoma:					1					
Oklahoma.....	91,295	43			5				1	2
Tulsa.....	72,075				1		1			
Oregon:										
Portland.....	258,288	54	2		1		2		4	5
Pennsylvania:										
Allentown.....	73,502		2		9				5	
Altoona.....	60,331		1							
Ambridge.....	12,730				6		3			
Beaver Falls.....	12,802				2		1		2	
Berwick.....	12,181		1		1					
Bethlehem.....	50,358		2		16				2	
Bradock.....	20,879				1					
Bradford.....	15,525				4					
Bristol.....	10,273				1					
Carriek.....	10,504						1		1	
Chester.....	58,030		1		2		2			
Coatesville.....	14,515						1			
Dickson.....	11,049		1							
Duquesne.....	19,011		1		1					
Easton.....	33,813		1		2					
Erie.....	93,372		2		74		1		8	
Farrell.....	15,586		1							
Harrisburg.....	75,917		2		3					
Hazleton.....	32,277				3					
Homestead.....	20,452								1	
Johnstown.....	67,327		6		24		3			
Lancaster.....	53,150		1		5				1	
Lebanon.....	24,643		3							
McKees Rocks.....	16,713		2						1	
McKeesport.....	46,781								5	
Meadville.....	14,568				7					
Nanticoke.....	22,614		1		3		1		1	
New Castle.....	44,938		1		1		1			
Norristown.....	32,319		1		5					
North Braddock.....	14,928		1							
Oil City.....	21,274				1					
Philadelphia.....	1,823,779	494	41	3	19		25	1	67	49
Phoenixville.....	10,484				3					
Pittsburgh.....	588,343	133	20	1	51		13			9
Pittston.....	18,497		1		1					
Pottsville.....	21,876		1		3					
Scranton.....	137,783		2		6				5	
Sharon.....	21,747						3			
Steelton.....	13,428						1			
Sunbury.....	15,721				2					
Swissvale.....	10,908		1		3					
Tamaqua.....	12,363				6					
Uniontown.....	15,692		1							
Warren.....	14,272		1		5		1		1	
Washington.....	21,480				12					
West Chester.....	11,717				2					
Wilkes-Barre.....	73,833		2		8		1		1	
Williamsport.....	36,198		2		9				1	
Woodlawn.....	12,495				1					
York.....	47,512		1						2	
Rhode Island:										
Cranston.....	29,407	5					1			
Cumberland (town).....	10,077	1			1					
East Providence (town).....	21,793						1			

**CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.**  
**DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.**

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Rhode Island—Continued.										
Newport.....	30,255	3	4							1
Pawtucket.....	64,248	6	3							7
Providence.....	237,595	50	5	1	9		6			
South Carolina:										
Charleston.....	67,957	27			14				3	
Columbia.....	37,524	21			3				3	
Greenville.....	23,127	8			1					
South Dakota:										
Sioux Falls.....	25,202	7	2		3					
Tennessee:										
Knoxville.....	77,818				3				1	1
Memphis.....	162,351	67			2		2		17	6
Nashville.....	118,342	54			1		1		5	3
Texas:										
Amarillo.....	15,494	10							1	
Beaumont.....	40,422	10								2
Dallas.....	158,976	43	3	1	9		1			1
El Paso.....	77,560	42			4				7	13
Fort Worth.....	106,482	12	1		1		2		5	
Galveston.....	44,255	3	1							
Houston.....	138,276	26	2		4					2
San Antonio.....	161,379	50	1		8		1		3	5
Waco.....	38,500	9					1			1
Utah:										
Provo.....	10,303	2								
Salt Lake City.....	118,110	23	2	1	9					1
Vermont:										
Burlington.....	22,779	24			26		1			3
Virginia:										
Alexandria.....	18,060	3			3					2
Charlottesville.....	10,688	6	1	1						
Danville.....	21,539	7								
Lynchburg.....	30,070	2			2				1	
Norfolk.....	115,777				56				6	3
Petersburg.....	31,012	15			8				1	1
Richmond.....	171,667	63	1		128		1		5	4
Roanoke.....	50,842	13			6	1				2
Washington:										
Everett.....	27,644						1			
Seattle.....	315,312		1		30		3		34	
Spokane.....	104,437		1		17		3			
Tacoma.....	96,965		2				3			
West Virginia:										
Bluefield.....	15,282	7			1					
Charleston.....	39,698	25	1		2					
Clarksburg.....	27,869	10			34				2	
Fairmont.....	17,851		1		2					
Huntington.....	50,177	22			6	2				2
Morgantown.....	12,127				1					
Parkersburg.....	20,050	3			1				2	
Wheeling.....	56,208	18			5		2		1	1
Wisconsin:										
Appleton.....	19,561	6	1		7					
Ashland.....	11,334	7			15		11	2		
Beloit.....	21,284	1			4		3			1
Eau Claire.....	20,906		1		20		1			
Fond du Lac.....	23,427	6							1	
Green Bay.....	31,017		1		6		4			
Janesville.....	18,293	7							1	
Kenosha.....	40,472	6	3							
La Crosse.....	30,421				8		3			
Madison.....	38,378	3			29		1			
Manitowoc.....	17,563				11					
Marinette.....	13,610				4					
Milwaukee.....	457,147	87	15	2	9		28	1	11	5
Oshkosh.....	33,162	14			29				1	
Racine.....	58,593	5	4		3		2			
Sheboygan.....	30,955	9	3		1				3	
Superior.....	39,671	5			2		3			
Waukesha.....	12,558				6		1			
Wausau.....	18,061				5					
West Allis.....	13,745						2		2	
Wyoming:										
Cheyenne.....	13,829	3			1		1		1	1

## FOREIGN AND INSULAR.

### COLOMBIA.

#### Quarantine for Protection of North Coast Cities.

Information dated June 2, 1923, shows that on May 26 a four days' quarantine was established by the Government of the Republic of Colombia at a point one day out from Bucaramanga, for protection of travel to the Magdalena River and the north coast cities against yellow fever infection.<sup>1</sup>

### CUBA.

#### Communicable Diseases—Habana.

Communicable diseases have been notified at Habana, Cuba, as follows:

Disease.	June 21-30, 1923.		Remain- ing under treat- ment June 30, 1923.
	New cases.	Deaths.	
Chicken pox.....	3	.....	5
Diphtheria.....	3	.....	1
Leprosy.....	.....	.....	1 12
Malaria.....	39	2	2 31
Measles.....	6	.....	9
Paratyphoid fever.....	2	.....	5
Scarlet fever.....	1	.....	3
Typhoid fever.....	19	2	2 38

<sup>1</sup> From abroad, 1.

<sup>2</sup> From the interior, 14.

<sup>3</sup> From the interior, 26.

### MADAGASCAR.

#### Plague.

During the period April 16 to 30, 1923, 29 cases of plague with 29 deaths were reported in the island of Madagascar, occurring in the Province and town of Tananarive, the distribution being as follows: Province—cases 17, deaths 17; town of Tananarive—cases 12, deaths, 12.

<sup>1</sup> Public Health Reports, Mar. 23, 1923, p. 650; May 11, 1923, p. 1045; June 1, 1923, p. 1222; June 15, 1923, p. 1376.



**PERSIA.****Vaccination Against Animal Anthrax.**

Information received under date of May 14, 1923, shows that arrangements were being made at that date for carrying out vaccination of animals against anthrax in certain villages in Persia, with a view to popular education in the use of anthrax serum. It was stated that high mortality from anthrax was reported among animals in Persia.

**PERU.****Plague—May 16-31, 1923.**

During the period May 16 to 31, 1923, plague was reported present in Peru, with 36 cases and 16 deaths, occurring in 10 localities. For distribution of cases and deaths according to locality, see page 1663.

**POLAND.****Communicable Diseases—March 4-17, 1923.**

Communicable diseases have been notified in Poland as follows:

**MARCH 4-10, 1923.**

Disease.	Cases.	Deaths.	District and city showing greatest mortality.
Cerebrospinal meningitis.....	12	10	Upper Silesia.
Diphtheria.....	71	5	Pomerania.
Measles.....	609	22	Lodz.
Scarlet fever.....	194	24	Stanislawow.
Smallpox.....	10	1	Do.
Tuberculosis.....	119	287	Lwow.
Typhoid fever.....	269	28	Lodz.
Typhus fever.....	541	40	Lwow.
Typhus fever, recurrent.....	84	2	Polesia and Volhynia.
Whooping cough.....	64	10	Warsaw.

**MARCH 11-17, 1923.**

Cerebrospinal meningitis.....	18	11	Lodz.
Diphtheria.....	70	13	Warsaw.
Measles.....	694	21	Lwow.
Scarlet fever.....	220	42	Stanislawow.
Smallpox.....	19	1	Krakow.
Tuberculosis.....	141	214	Warsaw.
Typhoid fever.....	219	17	Lodz.
Typhus fever.....	501	30	Lwow and Tarnopol.
Typhus fever, recurrent.....	60	1	Nowogrodek.
Whooping cough.....	81	16	Lwow.

**Other Diseases—Anthrax—Dysentery—Rabies.**

During the week ended March 10, 1923, one case of anthrax with one death was reported in Poland, occurring in the district of Lublin. During the week ended March 17, 1923, nine cases of dysentery with two deaths, occurring in the districts of Bialystok and Pomerania, and one death from rabies, occurring in the district of Lwow, were reported in Poland.



**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER.**

The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

**Reports Received During Week Ended July 20, 1923.<sup>1</sup>****CHOLERA.**

Place.	Date.	Cases.	Deaths.	Remarks.
India.....				Apr. 22-June 2, 1923: Cases, 5,775; deaths, 5,523. Epidemic.
Calcutta.....	May 20-June 2....	117	91	
Rangoon.....	May 20-26.....	6	5	
Philippine Islands: Province.....				
Laguna.....	June 3-9.....	1		
Siam: Bangkok.....	May 13-19.....	3	4	

**PLAGUE.**

British East Africa: Kenya— Tanganyika.....	May 6-12.....	1	1	Plague rats, 32.
Ceylon: Colombo.....	May 13-26.....	7	7	
China: Amoy.....	May 20-26.....		2	
Hongkong.....	May 20-26.....	23	10	
India: Bombay.....	Apr. 29-May 19....	261	214	
Calcutta.....	May 20-June 2....	7	6	Apr. 16-30, 1923: Cases, 29; deaths, 29. Bubonic, pneumonic, septicemic.
Karachi.....	May 27-June 2....	21	15	
Madras Presidency.....	May 27-June 2....	71	35	
Rangoon.....	May 20-26.....	19	14	
Madagascar: Province.....				
Tananarive.....	Apr. 16-30.....	17	17	May 16-31, 1923: Cases, 36; deaths, 16.
Tananarive.....	do.....	12	12	
Peru.....				
Locality— Avacaba.....	May 16-31.....	2		
Callao.....	do.....	1		
Canete.....	do.....	2	2	
Cerro Azul.....	do.....	1	1	
Chiclayo.....	do.....	3	2	
Huancabamba.....	do.....	15	7	
Lima (city).....	do.....	4	1	
Lima (country).....	do.....	3	2	
Salaverry.....	do.....	4		
Trujillo.....	do.....	1	1	
Siam: Bangkok.....	May 13-26.....	11	10	

**SMALLPOX.**

Bolivia: La Paz.....	Apr. 1-30.....	1	2	From vessel from Bombay.
British East Africa: Kenya— Mombasa.....	May 20-26.....	1		
Tanganyika.....	Apr. 29-May 5....	2		
Canada: British Columbia— Vancouver.....	May 27-June 23....	31		
Ceylon: Colombo.....	May 13-19.....	5		
Chile: Concepcion.....	May 22-28.....		2	Present.
Valparaiso.....	May 7-June 2....		107	
China: Amoy.....	May 20-26.....		1	
Chungking.....	May 20-June 2....			
Hongkong.....	May 20-26.....	14	10	

<sup>1</sup> From medical officers of the Public Health Service, American consuls, and other sources.

# **CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.**

**Reports Received During Week Ended July 20, 1923—Continued.**

## **SMALLPOX—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
<b>Chosen (Korea):</b>				
Chemulpo.....	May 1-31.....	1	.....	
Fusan.....	do.....	1	.....	
Gensan.....	do.....	1	.....	
Seoul.....	do.....	33	9	
<b>Greece:</b>				
Patras.....	Apr. 24-May 13.....	.....	11	
Saloniki.....	Apr. 30-May 20.....	2	2	
<b>India:</b>				Apr. 22-May 5, 1923: Cases, 3,193; deaths, 933.
Bombay.....	Apr. 29-May 19.....	110	50	
Calcutta.....	May 20-26.....	2	1	
Karachi.....	May 27-June 2.....	11	.....	
Madras.....	do.....	3	3	
Rangoon.....	May 20-26.....	20	5	
<b>Japan:</b>				
Kobe.....	June 4-10.....	1	.....	
<b>Java:</b>				
East Java—				
Soerabaya.....	May 6-12.....	45	6	
West Java—				
Batavia.....	May 12-25.....	3	2	Province.
<b>Mexico:</b>				
Chihuahua.....	June 18-24.....	2	.....	
<b>Palestine:</b>				
Jaffa.....	June 5-11.....	1	.....	
<b>Portugal:</b>				
Lisbon.....	May 28-June 9.....	8	2	
Oporto.....	June 13-19.....	.....	1	
<b>Siam:</b>				
Bangkok.....	May 13-19.....	22	8	
<b>Sierra Leone:</b>				
Pujehun.....	May 16-31.....	1	.....	In Sembehun district.
<b>Switzerland:</b>				
Basel.....	June 3-9.....	1	.....	
Berne.....	do.....	5	.....	
<b>Tunis:</b>				
Tunis.....	June 11-17.....	1	.....	
<b>Turkey:</b>				
Constantinople.....	May 13-29.....	.....	29	
<b>On vessel:</b>				
S. S. Karagola.....	May 20-26.....	1	.....	At Mombasa, British East Africa; vessel arrived from Bombay, Mar. 25, 1923.

## **TYPHUS FEVER.**

<b>Chile:</b>				
Concepcion.....	May 22-June 4.....	.....	2	
Valparaiso.....	May 7-June 2.....	.....	13	
<b>Egypt:</b>				
Alexandria.....	June 4-10.....	2	1	
<b>Germany:</b>				
Königsberg.....	May 27-June 2.....	1	.....	
<b>Greece:</b>				
Patras.....	Apr. 24-May 13.....	.....	18	
Saloniki.....	Apr. 30-May 27.....	27	4	Recurrent typhus: Cases, 3; deaths, 3.
<b>Hungary:</b>				
Budapest.....	May 27-June 2.....	.....	1	
<b>Poland:</b>				
				Mar. 4-17, 1923: Cases, 1,042; deaths, 70. Recurrent typhus: Cases, 144; deaths, 3.
<b>Spain:</b>				
Madrid.....	May 1-31.....	.....	1	
<b>Tunis:</b>				
Tunis.....	June 11-17.....	.....	1	
<b>Turkey:</b>				
Constantinople.....	May 13-26.....	.....	13	

# **CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.**

**Reports Received from June 30 to July 13, 1923.<sup>1</sup>**

## **CHOLERA.**

Place.	Date.	Cases.	Deaths.	Remarks.
India.....				Apr. 15-21, 1923: Cases, 3,475; deaths, 2,603.
Calcutta.....	May 6-19.....	89	80	
Rangoon.....	May 13-19.....	1	1	
Philippine Islands:				
Province—				
Mountain.....	Mar. 25-31.....	1	1	

## **PLAGUE.**

Australia:				
Sydney.....	June 30.....	1	1	
Azores:				
St. Michael Island.....	May 6-26.....	12	5	In one locality.
Canary Islands:				
Las Palmas.....	June 7.....	1		
Ceylon:				
Colombo.....	May 6-12.....		3	
China:				
Amoy.....	May 13-19.....		1	
Hongkong.....	Apr. 29-May 12.....	6	4	
Ecuador:				
Guayaquil.....				May 16-31, 1923: Rats examined, 4,800; found infected, 21.
Hawaii:				
Hamakua.....				Plague-infected rats: Pohakea, May 23, 1923, 1 rat; vicinity of Pacific Sugar Co. mill, June 2, 1 rat.
India:				
Calcutta.....	May 6-19.....	6	6	
Karachi.....	May 13-26.....	60	46	
Madras Presidency.....	do.....	150	93	
Rangoon.....	May 6-19.....	66	62	
Java:				
East Java—				
Soerabaya.....	Apr. 1-30.....	487	487	
Soerakarta.....				May 16, 1923: Epidemic in five districts.
Madagascar.....				Apr. 1-15, 1923: Cases, 22; deaths, 19. Bubonic, 5; pneumonic, 1; septicemic, 16.
Province—				
Tananarive.....	Apr. 1-15.....	22	19	
Mexico:				
Tampico.....				Apr. 15-21, 1923: 1 plague rat.
Peru:				May 1-15, 1923: Cases, 21; deaths, 11.
Locality—				
Callao.....	May 1-15.....	2	1	
Cerro Azul.....	do.....	2		
Chiclayo.....	do.....	5		
Cutervo.....	do.....	2	1	
Huancabamba.....	do.....	3	6	
Lima (city).....	do.....	1		
Lima (country).....	do.....	2	1	
Salaverry.....	do.....	3	2	
Trujillo.....	do.....	1		
Siam:				
Bangkok.....	Apr. 29-May 12.....	5	4	
Straits Settlements:				
Singapore.....	May 6-12.....		2	

## **SMALLPOX.**

Algeria:			
Algiers.....	May 1-31.....	2	
Arabia:			
Aden.....	May 27-June 2.....		1
Brazil:			
Pernambuco.....	May 6-19.....	3	
Rio de Janeiro.....	May 13-26.....	4	1

<sup>1</sup> From medical officers of the Public Health Service, American consuls, and other sources. For reports received from Dec. 30, 1922, to June 29, 1923, see Public Health Reports for June 29, 1923. The tables for epidemic diseases are terminated semiannually and new tables begun.

# **CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.**

**Reports Received from June 30 to July 13, 1923—Continued.**

## **SMALLPOX—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
Canada:				
Alberta—				
Calgary.....	May 27-June 2....	1		Infection from Deer Lodge, Mont.
Quebec—				
Quebec.....	June 10-16.....	1		Varioloid.
Ceylon:				
Colombo.....	May 6-12.....	18		From outside city.
China:				
Amoy.....	May 13-19.....		1	
Antung.....	May 14-20.....	1		
Chungking.....	May 13-19.....			Present.
Foochow.....	May 13-26.....			Do.
Hongkong.....	Apr. 20-May 12....	19	21	
Manchuria—				
Dairen.....	May 21-27.....	1		
Harbin.....	May 7-27.....	2		
Mukden.....	May 13-20.....	1		
Nanking.....	May 13-26.....			Present.
Shanghai.....	May 21-June 3....	4		Foreign.
Czechoslovakia.....				Jan.-Mar., 1923: Cases, 15.
Ecuador:				
Guayaquil.....	May 16-31.....	1		
Finland.....				May 1-15, 1923: 1 case.
Great Britain:				
Cardiff.....	June 3-9.....	5		
India:				
Calcutta.....	May 13-19.....	3	3	Apr. 15-21, 1923: Cases, 1,780;
Karachi.....	May 13-19.....	7	6	deaths, 491.
Madras.....	May 13-20.....	14		
Rangoon.....	May 6-19.....	60	27	
Iraq (Mesopotamia):				
Bagdad.....	Apr. 1-30.....	10		
Italy:				
Turin.....	May 28-June 3....	1		
Jamaica.....				May 27-June 9, 1923: Cases, 124
Kingston.....	May 27-June 9....	17		(reported as alastrim).
Japan:				
Kobe.....	May 28-June 3....	1		
Java:				
East Java—				
Soerabaya.....	Apr. 22-28.....	27	4	
West Java—				
Batavia.....	May 5-11.....	6		Province.
Mexico:				
Mexico City.....	May 19-26.....	36		Including municipalities in Fed-
Chihuahua.....	June 11-17.....	5		eral District.
Persia:				
Tabriz.....	Apr. 1-14.....		1	District.
Portugal:				
Lisbon.....	May 20-June 2....	20		
Oporto.....	June 10-16.....	4	2	
Portuguese West Africa:				
Angola—				
Loanda.....	Apr. 1-21.....		2	
Rhodesia (British Africa):				
Northern Rhodesia.....	May 8-14.....	21	8	
Southern Rhodesia.....	May 3-16.....	4	2	
Siam:				
Bangkok.....	Apr. 29-May 12....	21	8	
Sierra Leone:				
Kaballa.....	May 1-15.....	1		
Spain:				
Barcelona.....	May 31-June 6....		1	
Valencia.....	May 15-June 10....	25	1	
Switzerland:				
Basel.....	May 27-June 3....	1		
Berne.....	May 20-26.....	1		
Lucerne.....	May 1-31.....	29		
Zurich.....	May 20-June 2....	6		
Syria:				
Damascus.....	May 15-21.....	2		
Union of South Africa:				
Cape Province.....	May 6-12.....			Outbreaks.
Orange Free State.....	Apr. 29-May 14....			Do.
On vessels:				
S. S. Makura.....	May 26.....	2		Two cases, in quarantine (re-
				ported as alastrim). Vessel
				left Victoria, B. C., Apr. 28,
				1923. Touched at Honolulu.

# **CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.**

**Reports Received from June 30 to July 13, 1923—Continued.**

## **TYPHUS FEVER.**

Place.	Date.	Cases.	Deaths.	Remarks.
Algeria:				
Algiers.....	May 1-31.....	41	14	
Chile:				
Talcahuano.....	May 13-19.....	1		
China:				
Hankow.....	May 19-25.....	1		
Manchuria—				
Harbin.....	May 6-13.....	1		
Mukden.....	May 14-20.....	2		
Czechoslovakia.....				Jan.-Mar., 1923: Cases, 191; deaths, 6.
Egypt:				
Alexandria.....	May 14-20.....	1	2	
Germany:				
Coblenz.....	May 27-June 2.....		1	
Hamburg.....	May 20-26.....	3		
Königsberg.....	May 13-19.....	1		
Stettin.....	May 27-June 2.....		1	
Guatemala:				
Guatemala City.....	Apr. 1-May 31.....		4	
Hungary.....				Jan. 1-May 19, 1923: Cases, 318; deaths, 36. In 11 counties.
Budapest.....	Jan. 1-May 26.....	48	11	
Iraq (Mesopotamia):				
Bagdad.....	Apr. 1-30.....	2		
Mexico:				
Mexico City.....	May 20-26.....	15		Including municipalities in Federal district.
Palestine:				
Jaffa.....	May 22-28.....	2		
Jerusalem.....	do.....	1		
Persia:				
Tabriz.....	Apr. 1-14.....	2		
Poland.....				Mar. 18-Apr. 7, 1923: Cases, 1,211; deaths, 102. Recurrent typhus: Cases, 194; deaths, 3.
Portugal:				
Oporto.....	June 10-16.....	1		
Russia (Soviet).....				Feb. 1-28, 1923: Cases, 17,577. Recurrent, Jan. 1-Feb. 28, 1923: Cases, 43,540.
Syria:				
Aleppo.....	May 20-26.....	3	1	
Beirut.....	May 1-10.....	1		
Tunis:				
Tunis.....	May 28-June 10.....	3		
Union of South Africa:				
Cape Province.....	Apr. 29-May 12.....			Outbreaks.
Orange Free State.....	May 6-12.....			Do.
Transvaal.....	do.....			Do.

## **YELLOW FEVER.**

Brazil:				
Bahia.....	May 13-June 2....	16	5	

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